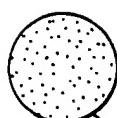




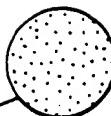
1/47

# FIG. 1



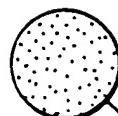
[ SEQ. ID NO: 3]

X-C-C-T-T-G-A-G-A-T-T-T-C-C-C-T-C  
5' 3'



G-G-A-A-C-T-C-T-A-A-A-G-G-G-A-G-X  
3' 5'

[ SEQ. ID NO: 4]



X-C-C-T-T-G-A-G-A-T-T-T-C-C-C-T-C  
G-G-A-A-C-T-C-T-A-A-A-G-G-G-A-G-X

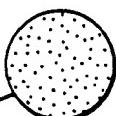


FIG. 2

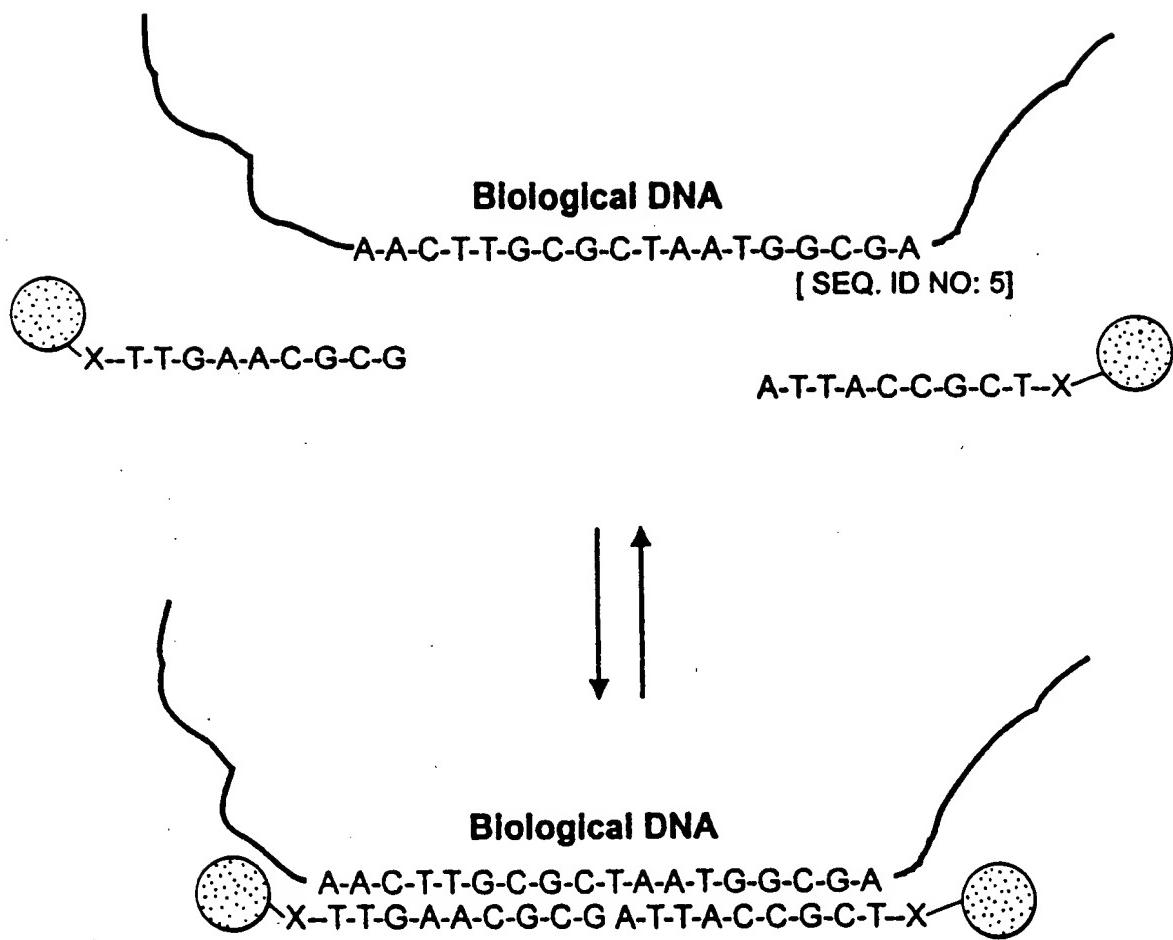
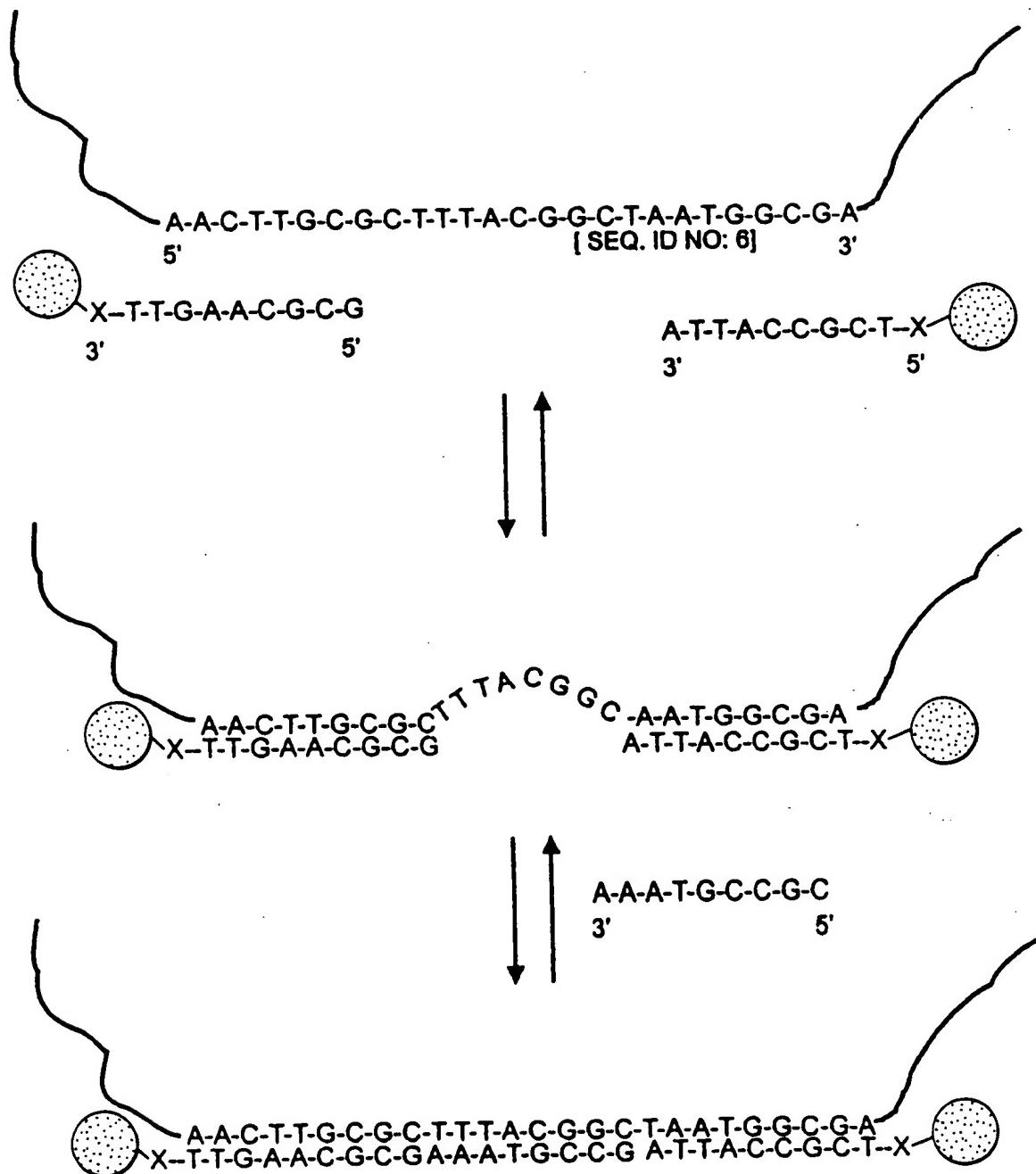


FIG. 3



# FIG. 4

A-T-G-G-C-A-A-C-T-A-T-A-C-G-C-G-C-T-A-G  
A-T-A-T-G-C-G-C-G-A-T-C-T-C-A-G-C-A-A-A  
[SEQ. ID NO: 2] ↗  
[SEQ. ID NO: 1] ↗  
3'   5'  
3'   5'

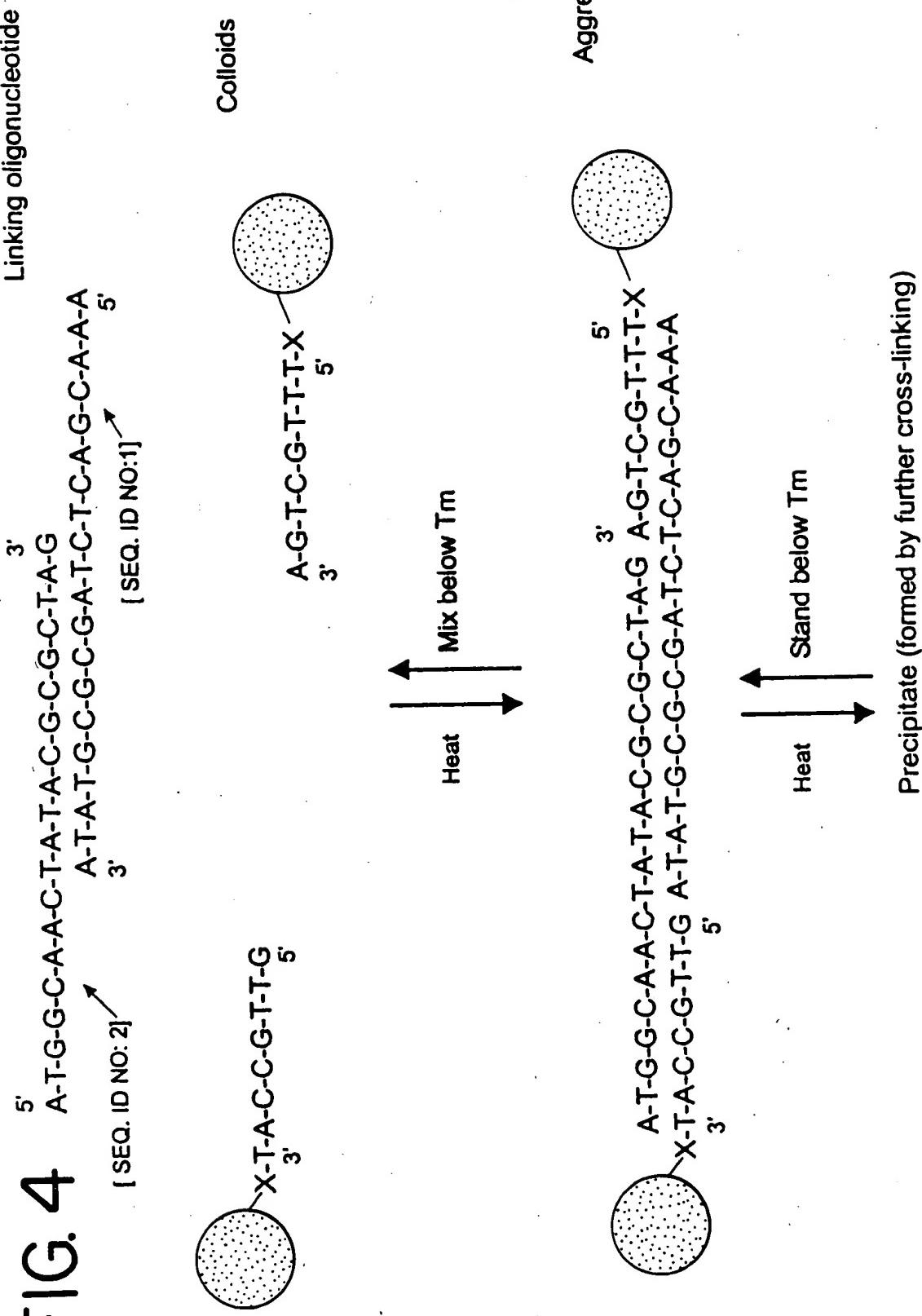
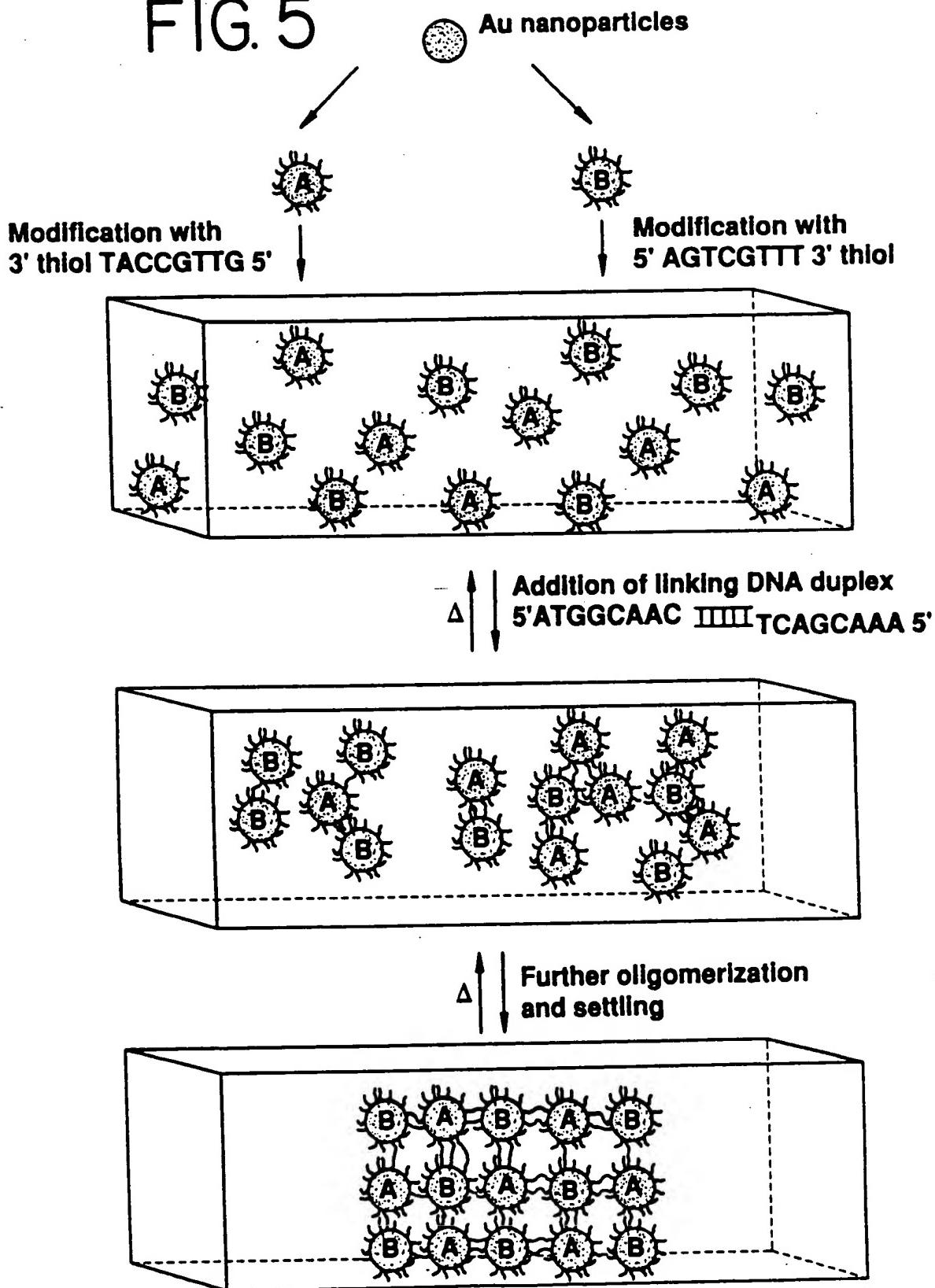


FIG. 5



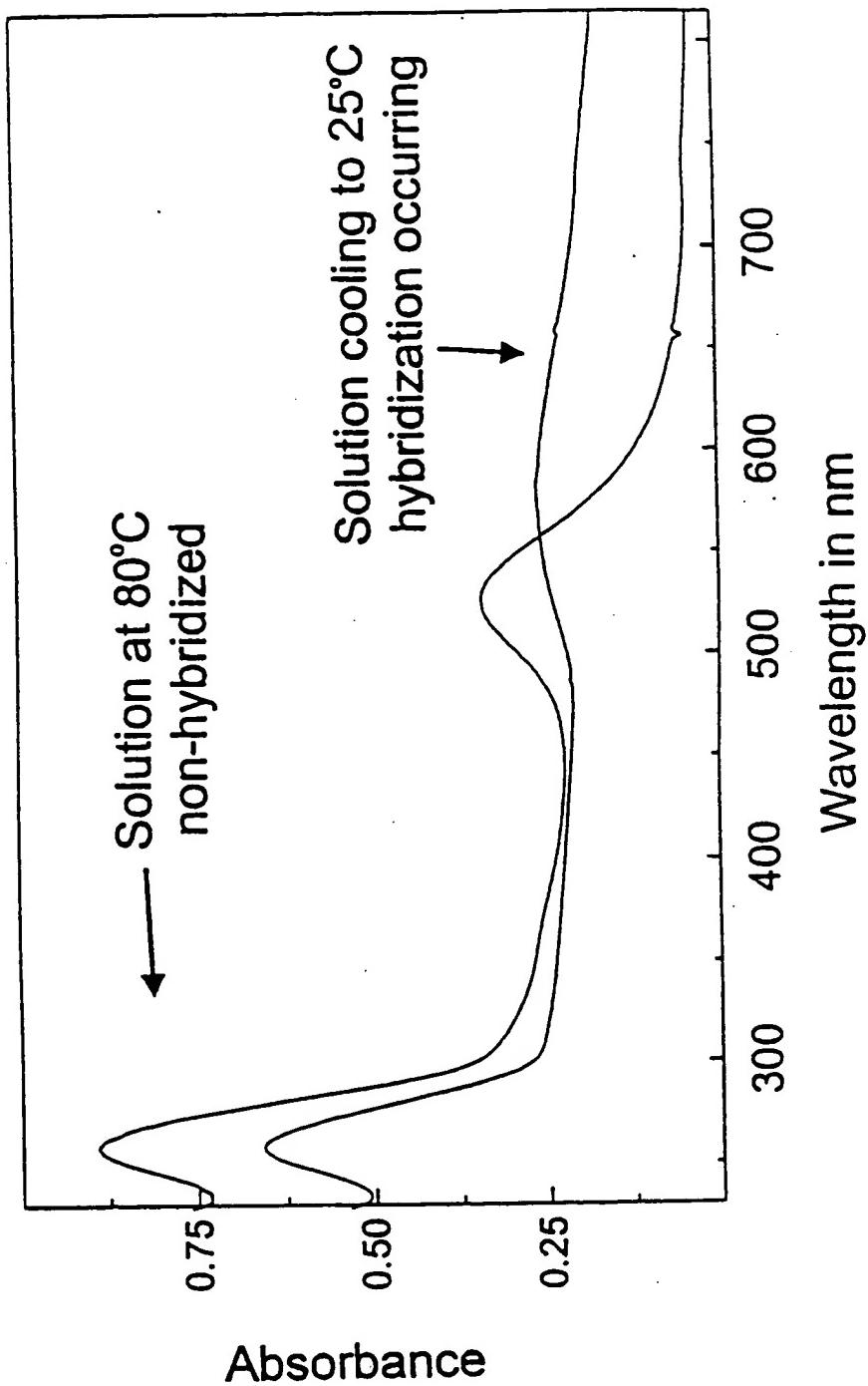
6/47

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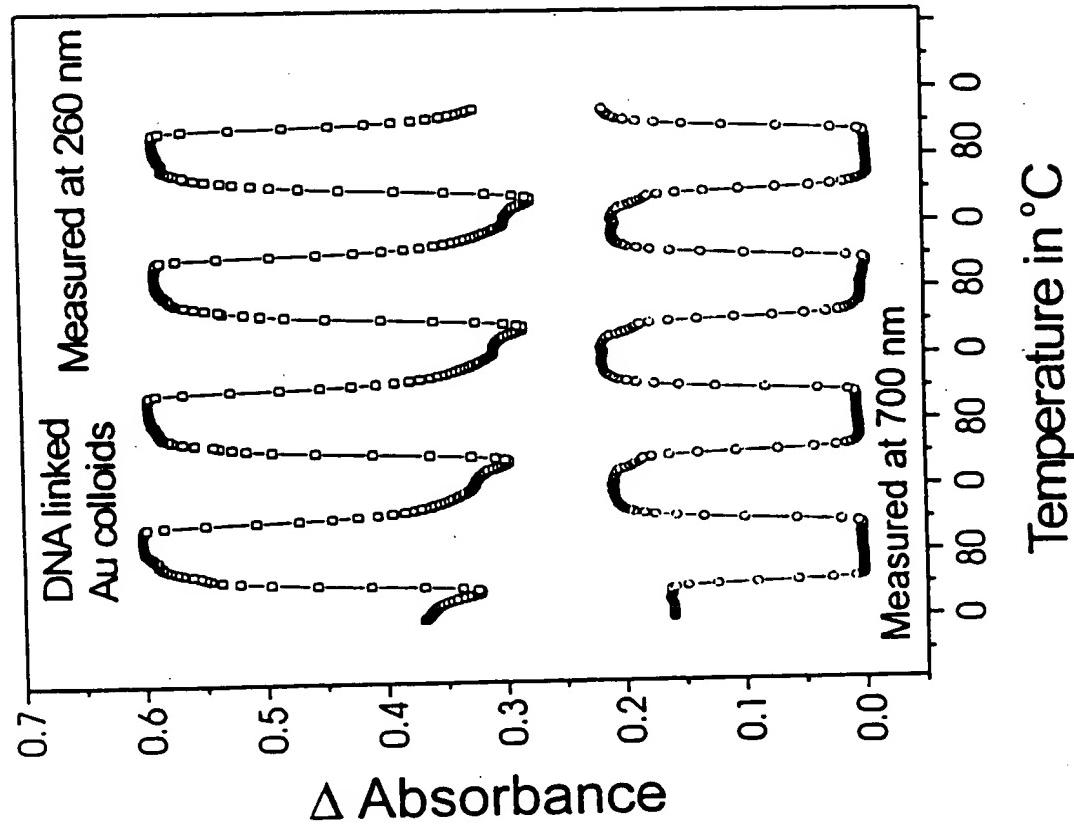
**FIG. 6A FIG. 6B FIG. 6C**



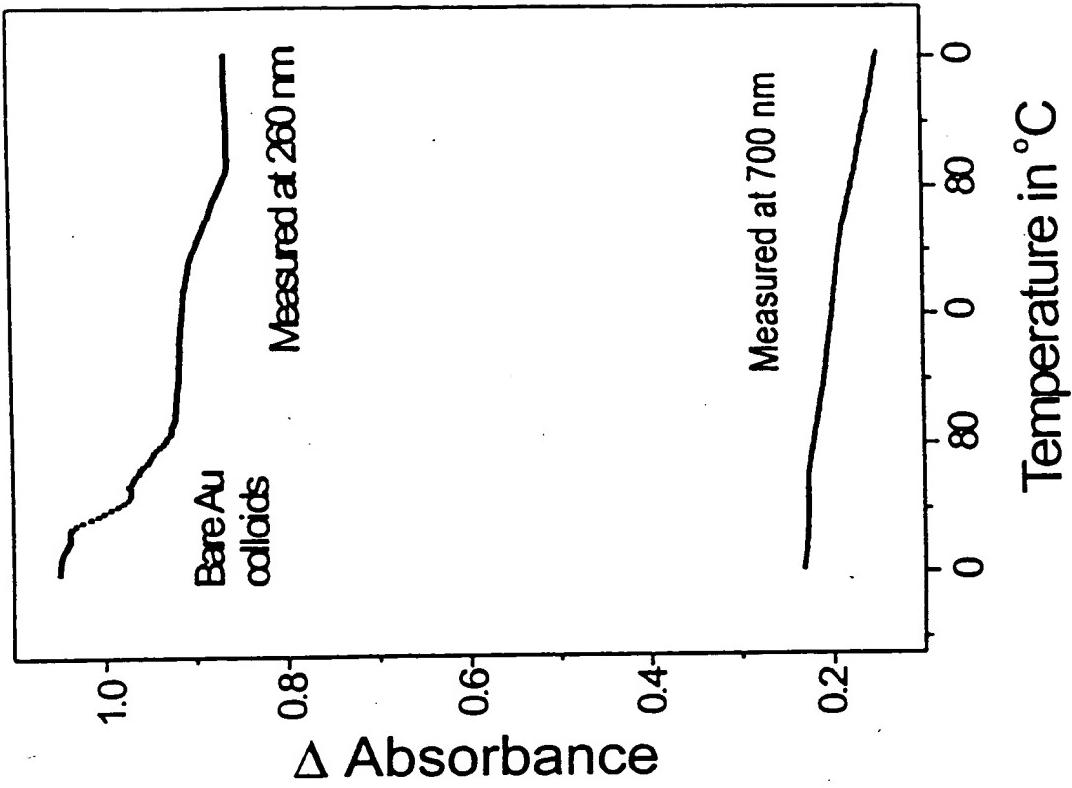
FIG. 7

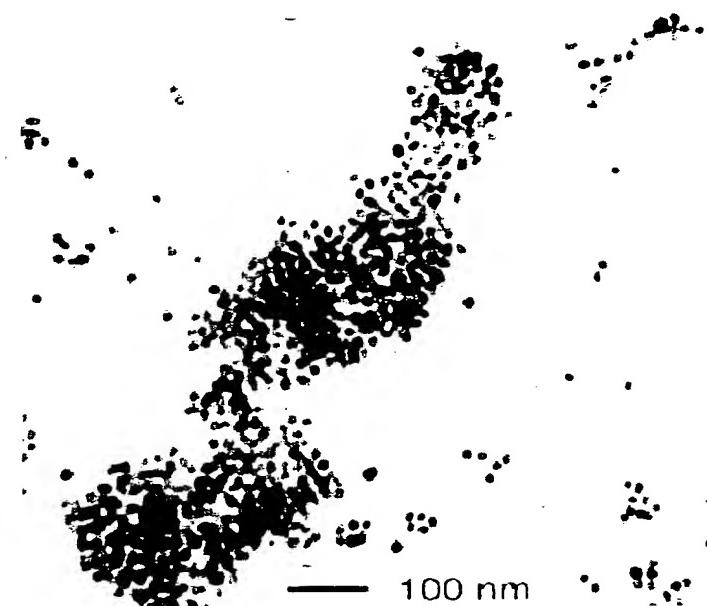
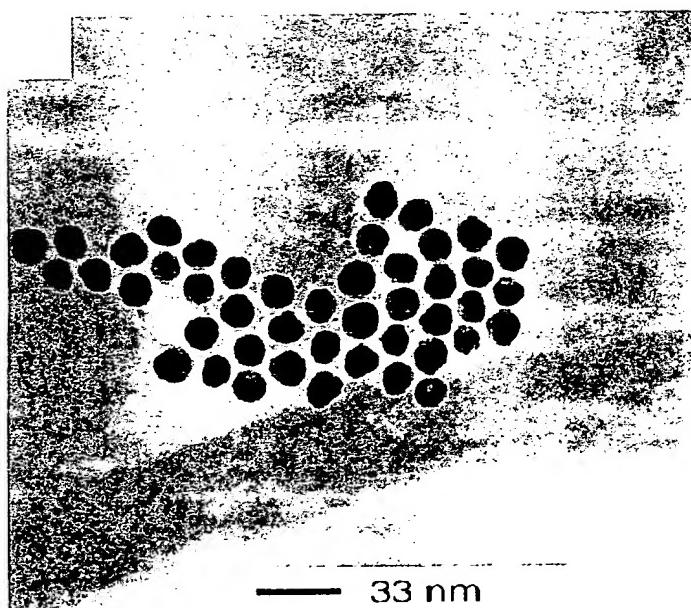


**FIG. 8A**

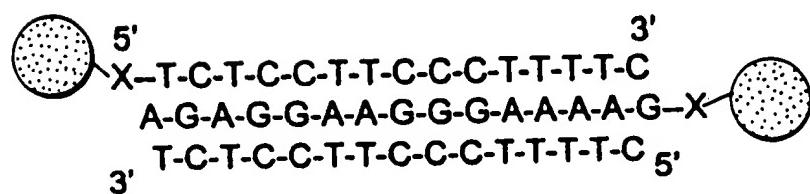
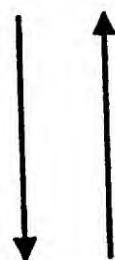
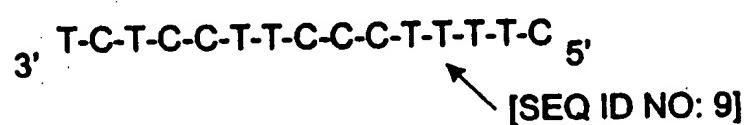
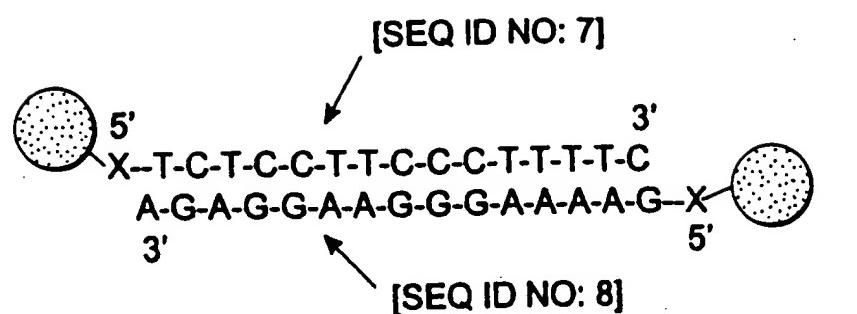


**FIG. 8B**

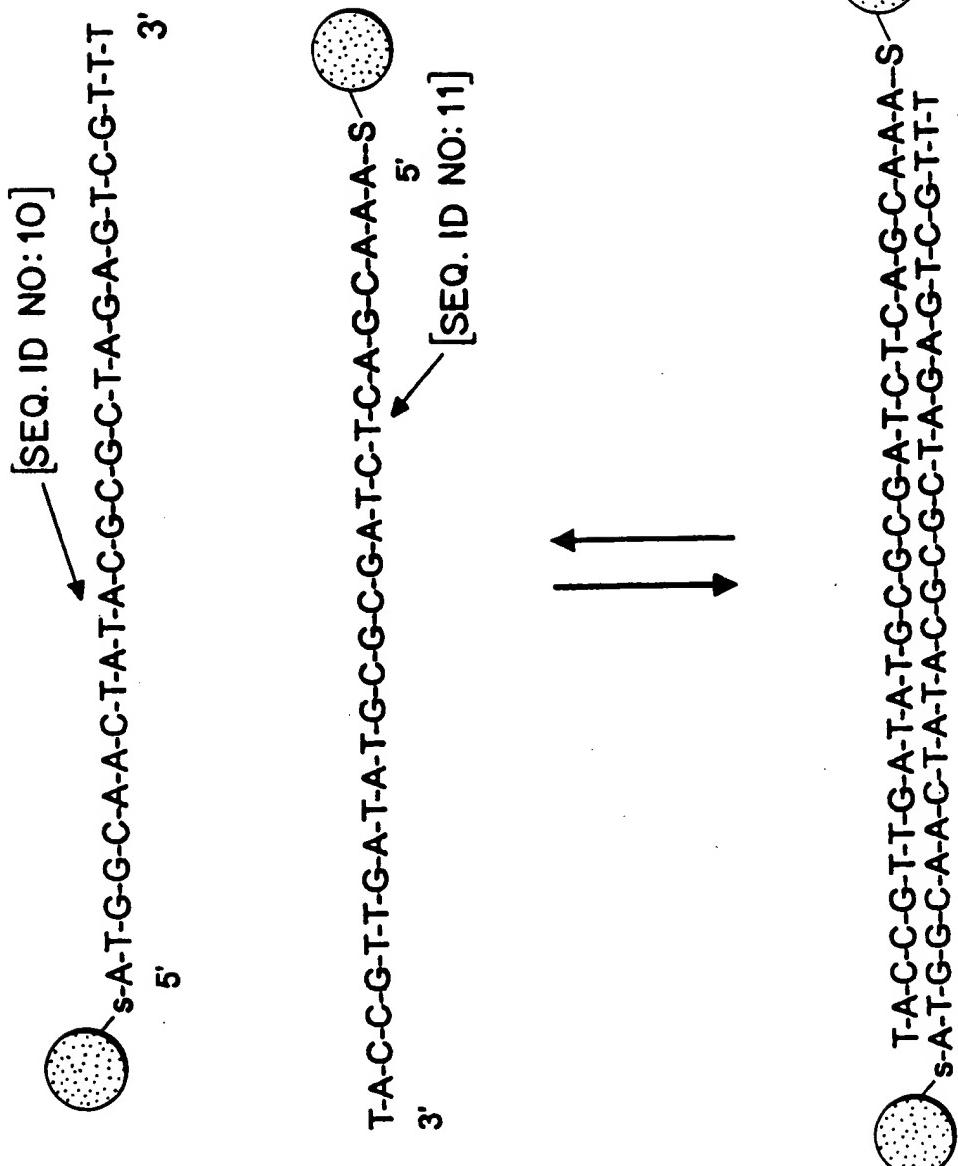


**FIG. 9A****FIG. 9B**

## FIG. 10



# FIG. II



**FIG. I2A**Complementary Target

[SEQ. ID NO:12]

**1**

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C  
 5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

**3****2**

[SEQ. ID NO: 14]

[SEQ. ID NO: 13]

**FIG. I2B**Probes without Target**1**

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C  
 T-T-T-G-C-T-G-A-G-A-T-C-G-C-G

**2****FIG. I2C**Half Complementary Target**1**

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C  
 5' A-G-C-A-T-G-G-T-C-G-A-T-A-G-G-A-T-G-G-C-A-A-C-T-A-T-A-C-G-C

**4****2**

[SEQ. ID NO: 15]

**FIG. I2D**Target - 6 bp**1**

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C  
 5' G-T-C-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

**5****2**

[SEQ. ID NO: 16]

**FIG. I2E**One bp Mismatch**1**

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C  
 5' A-G-C-A-T-G-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

**6****2**

[SEQ. ID NO: 17]

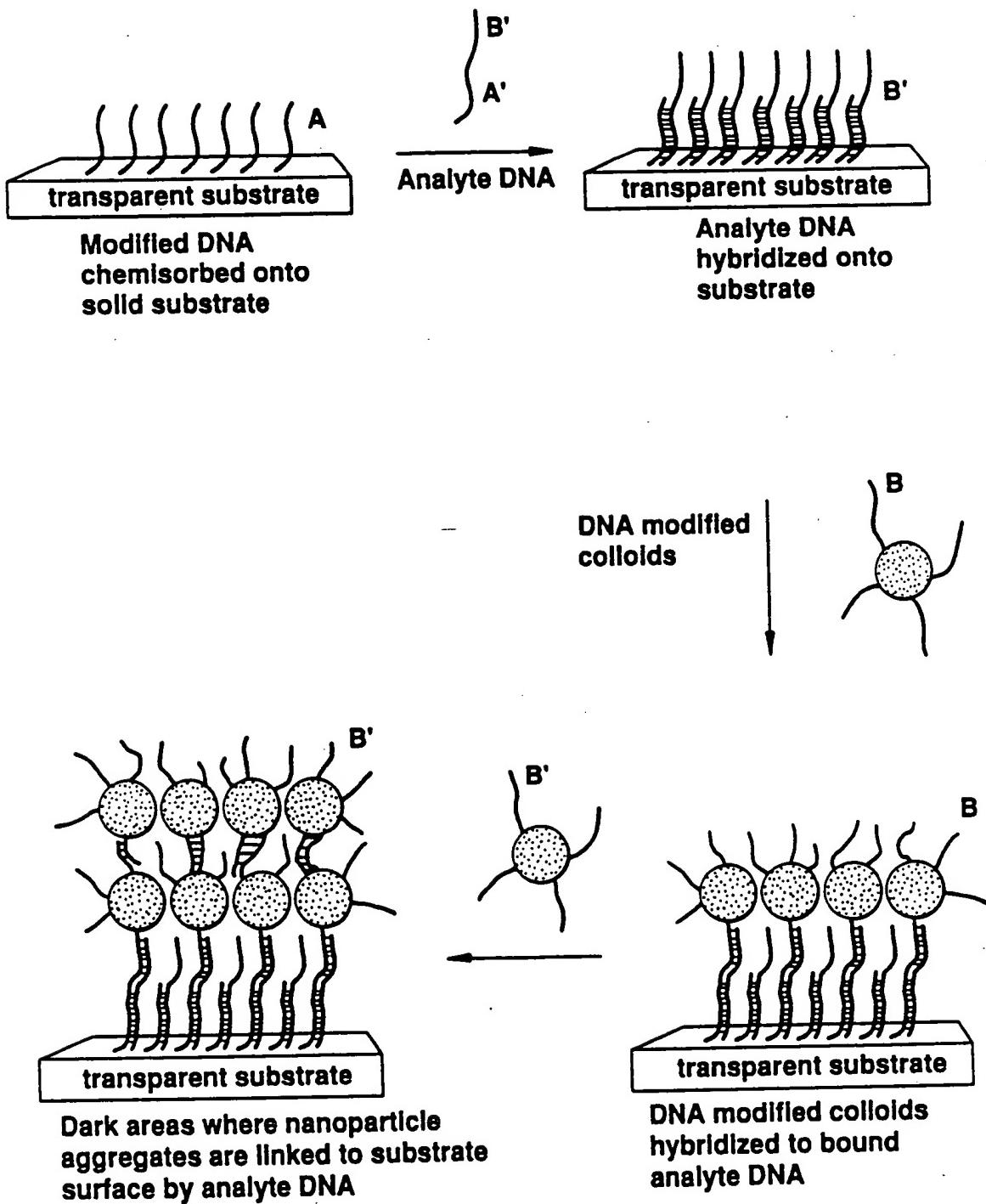
**FIG. I2F**Two bp Mismatch**1**

3' T-C-G-T-A-C-C-A-G-C-T-A-T-C-C  
 5' A-G-C-A-T-G-T-T-G-A-T-A-G-G-A-A-A-C-G-A-C-T-C-T-A-G-C-G-C

**7****2**

[SEQ. ID NO: 18]

FIG. 13A



**FIG. 13B**

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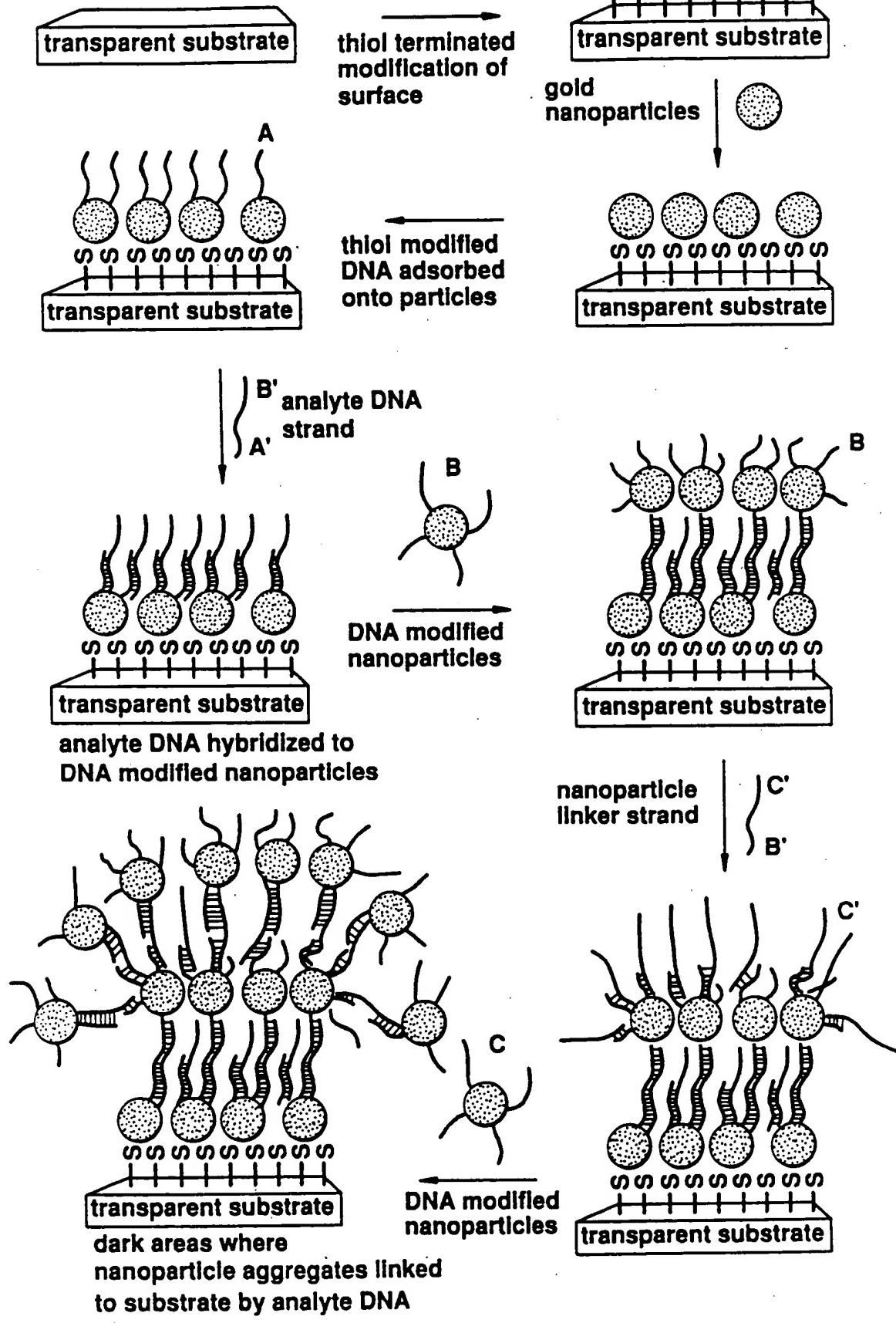


FIG. I4A

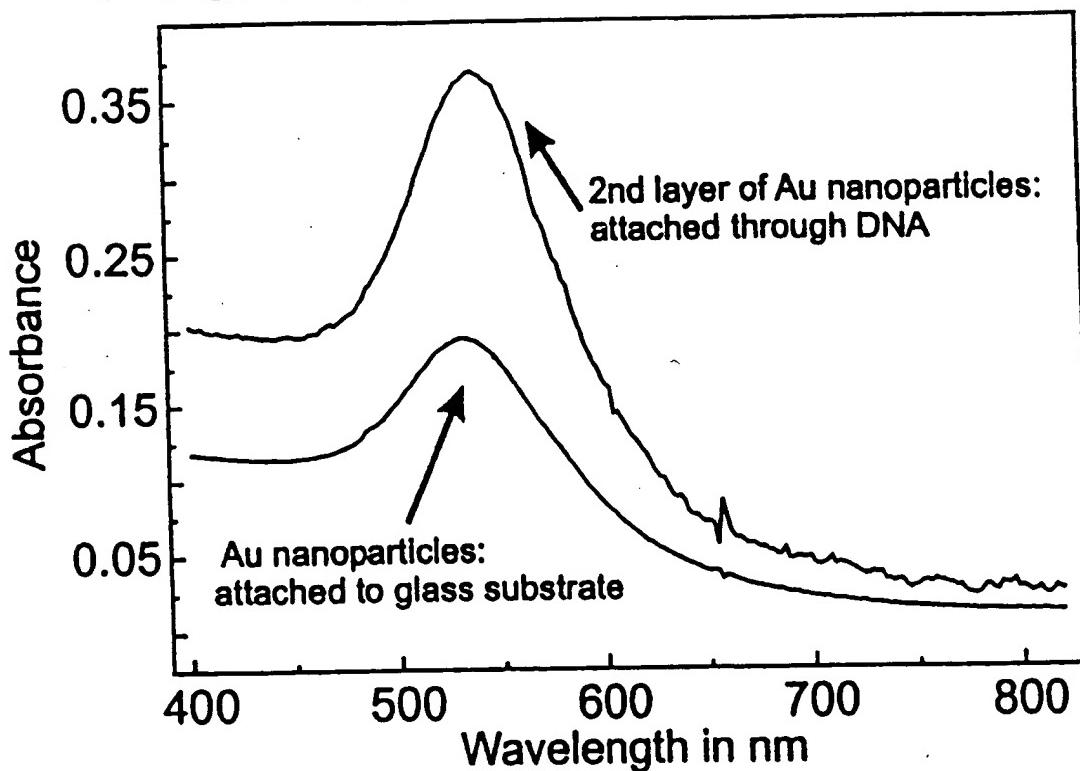
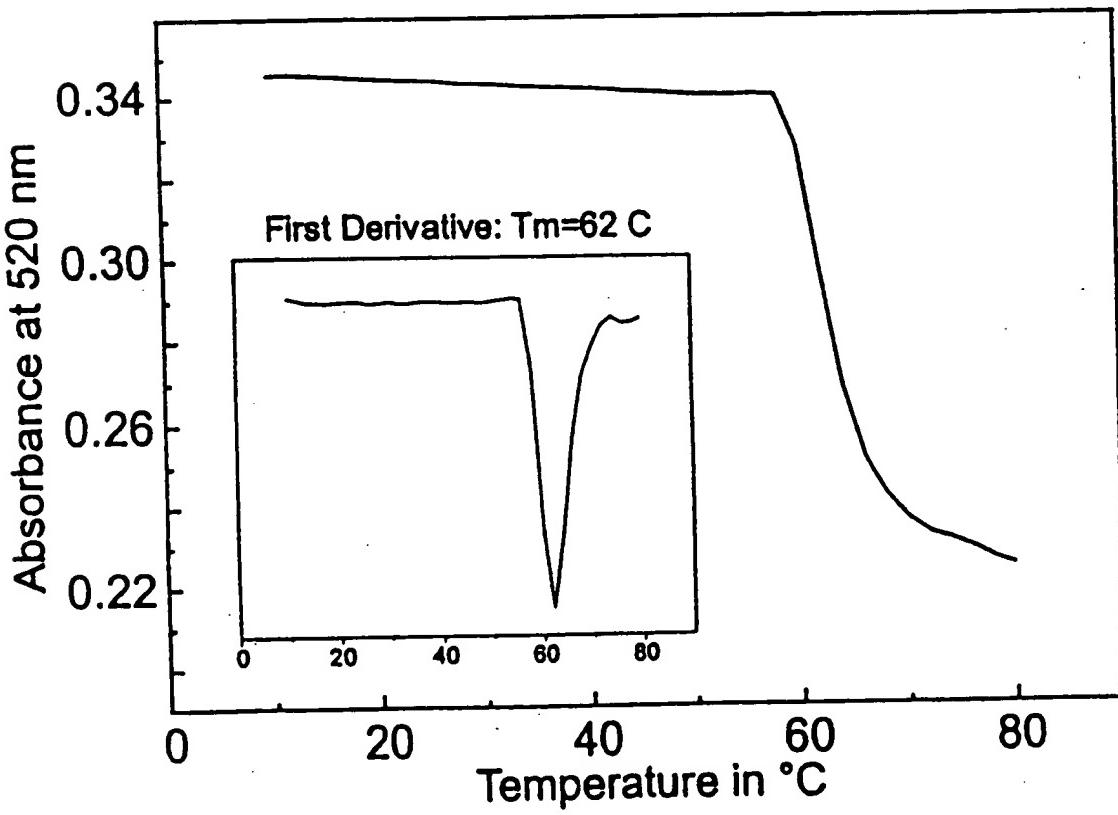
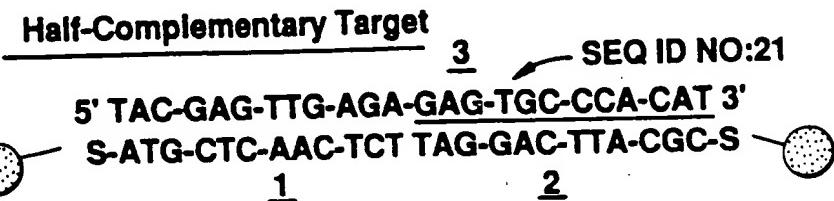
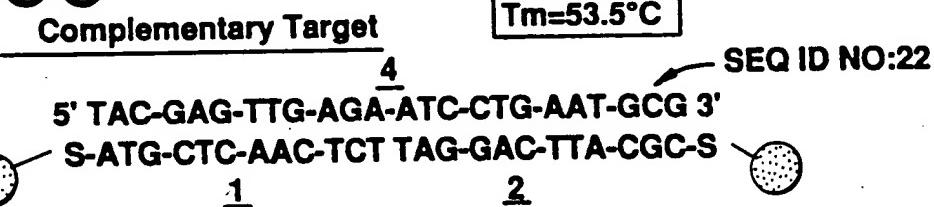
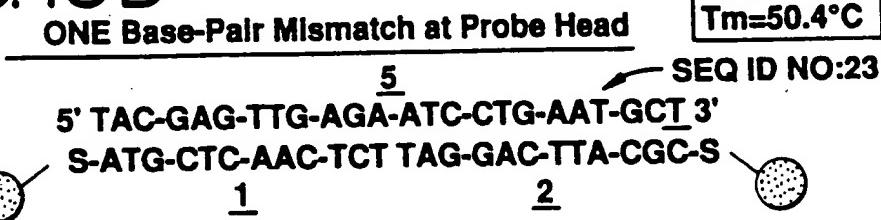
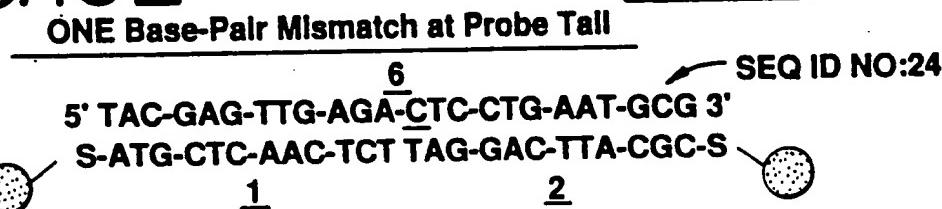
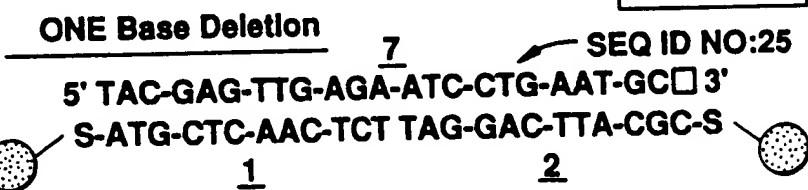
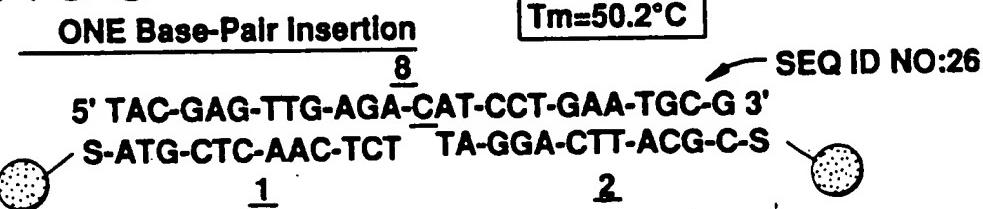


FIG. I4B



**FIG. 15A****FIG. 15B****FIG. 15C****FIG. 15D****FIG. 15E****FIG. 15F****FIG. 15G**

## FIG. 16A

### 24 Base Template

5' TAC-GAG-TTG-AGA-ATC-CTG-AAT-GCG 3'  
—S-ATG-CTC-AAC-TCT TAG-GAC-TTA-CGC-S —  
1  
2

## FIG. 16B

### 48 Base Template with Complementary 24 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-ATC-CTG-AAT-GCG 3'  
—S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT TAG-GAC-TTA-CGC-S —  
1  
2

## FIG. 16C

### 72 Base Template with Complementary 48 Base Filler

5' TAC-GAG-TTG-AGA-CCG-TTA-AGA-CGA-GGC-AAT-CAT-GCA-TAT-GGG-CGC-TTT-ACG-GAC-AAC-ATC-CTG-AAT-GCG 3'  
—S-ATG-CTC-AAC-TCT GGC-AAT-TCT-GCT-CCG-TTA-GTA-CGT-ATA-TAA-CCT-GCG-CTG-TTG TAG-GAC-TTA-CGC-S —  
1  
2

FIG. 17A

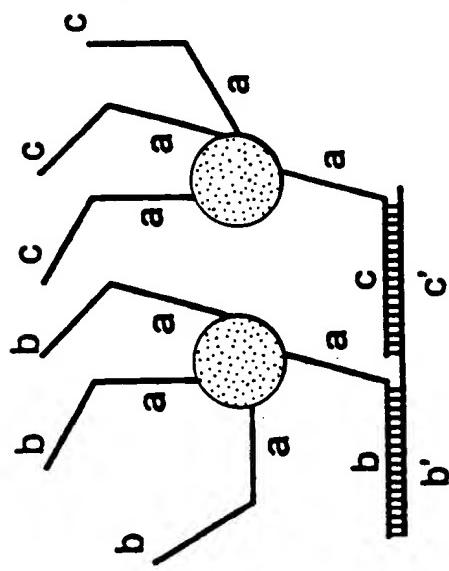


FIG. 17B

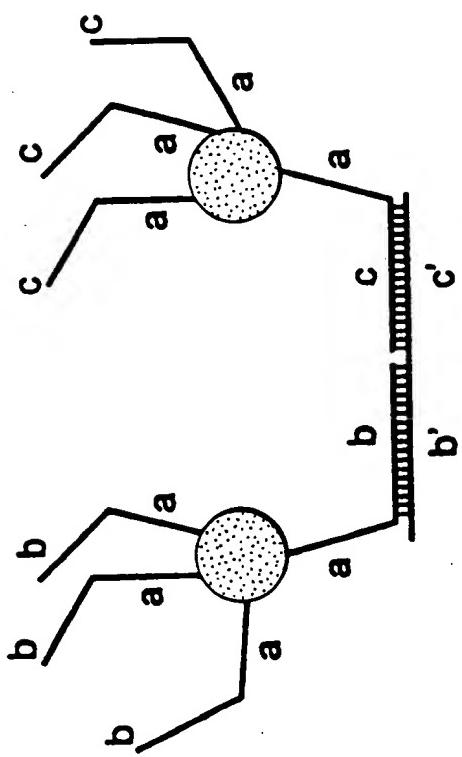


FIG. 17C

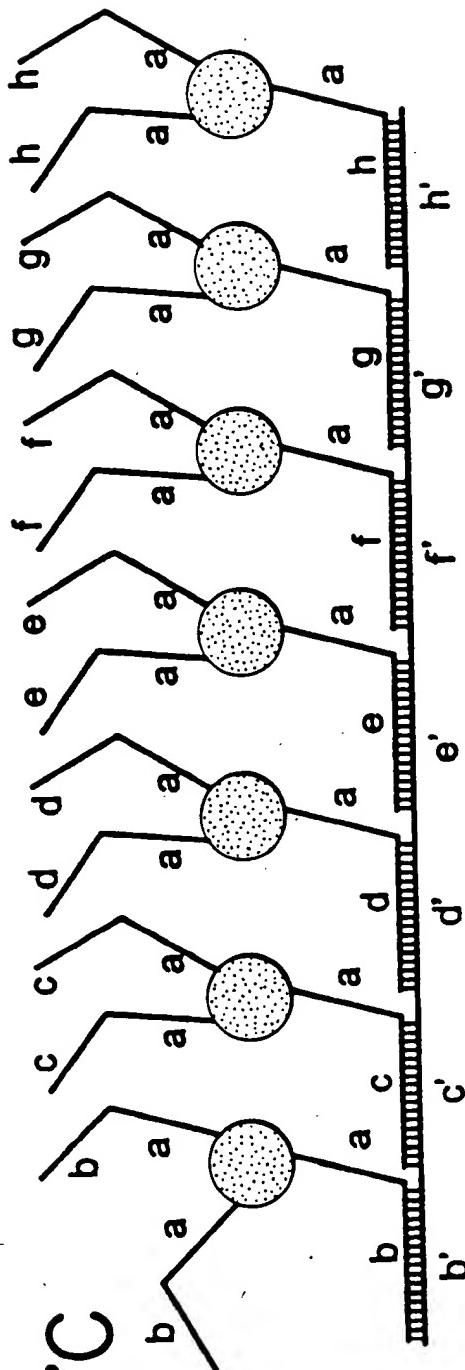


FIG. 17D

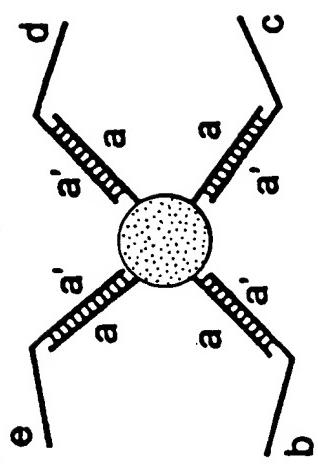
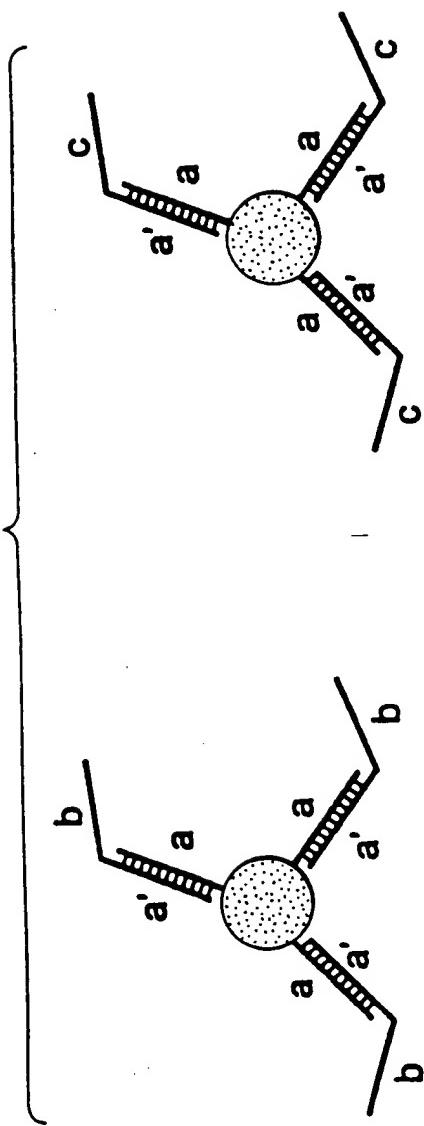
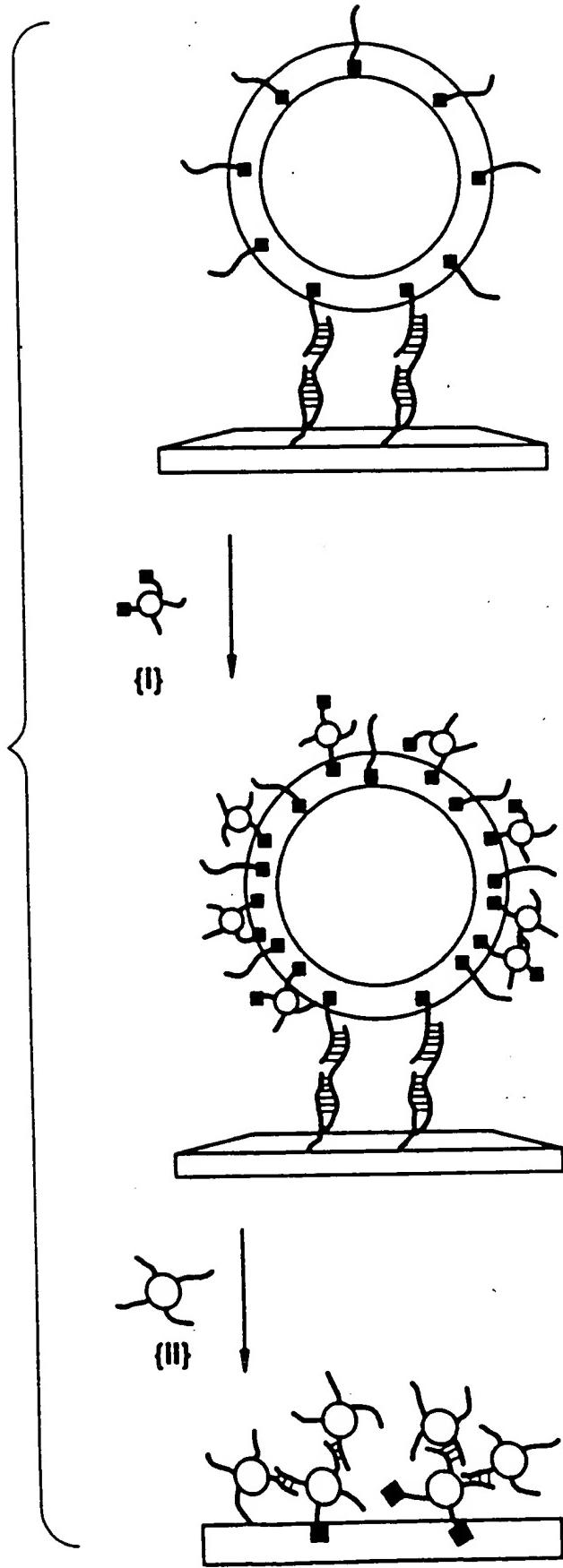
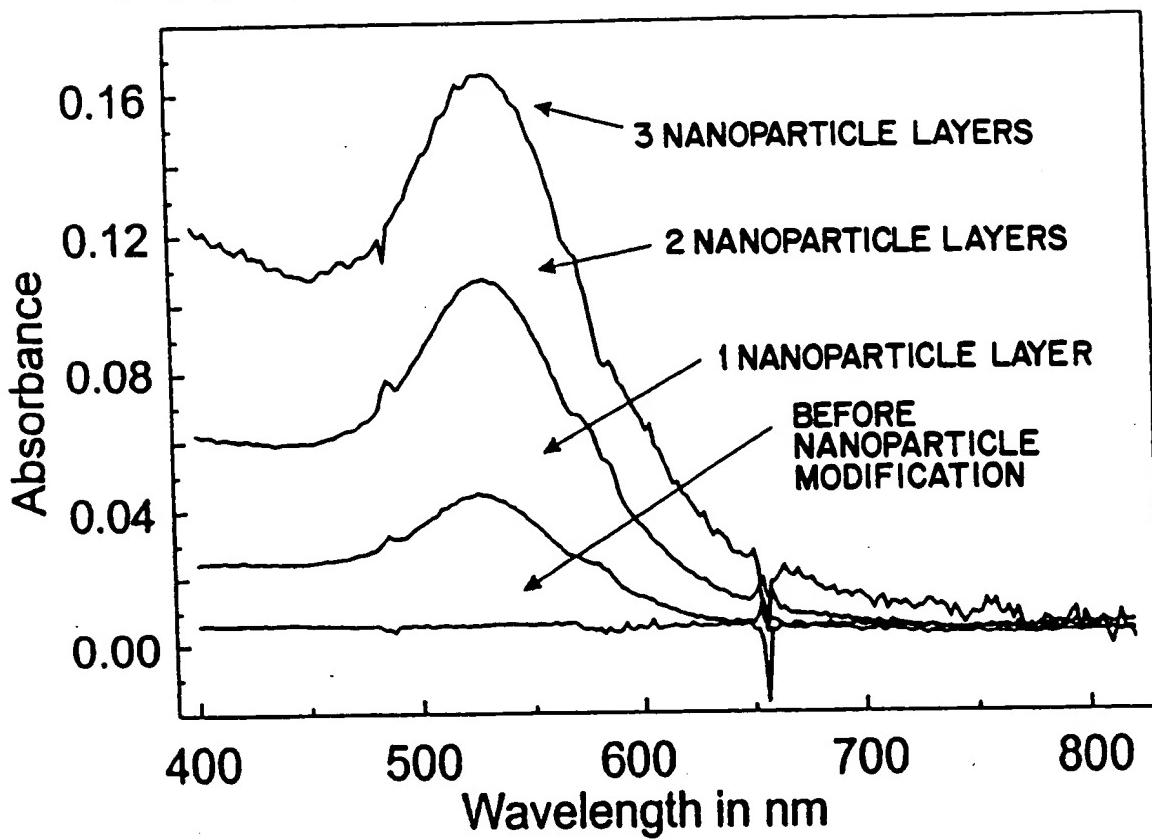
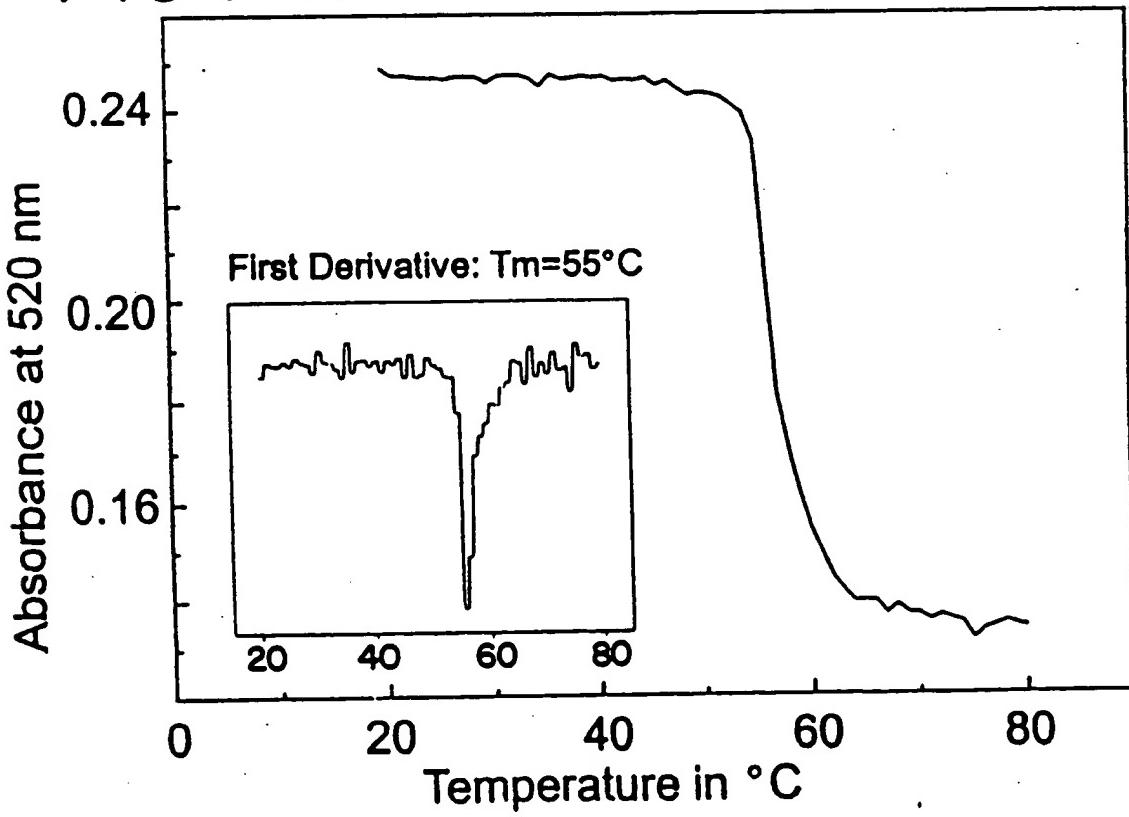


FIG. 17E

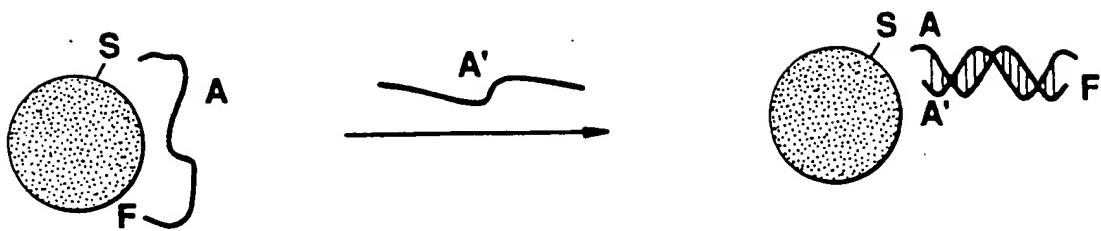
FIG. 18

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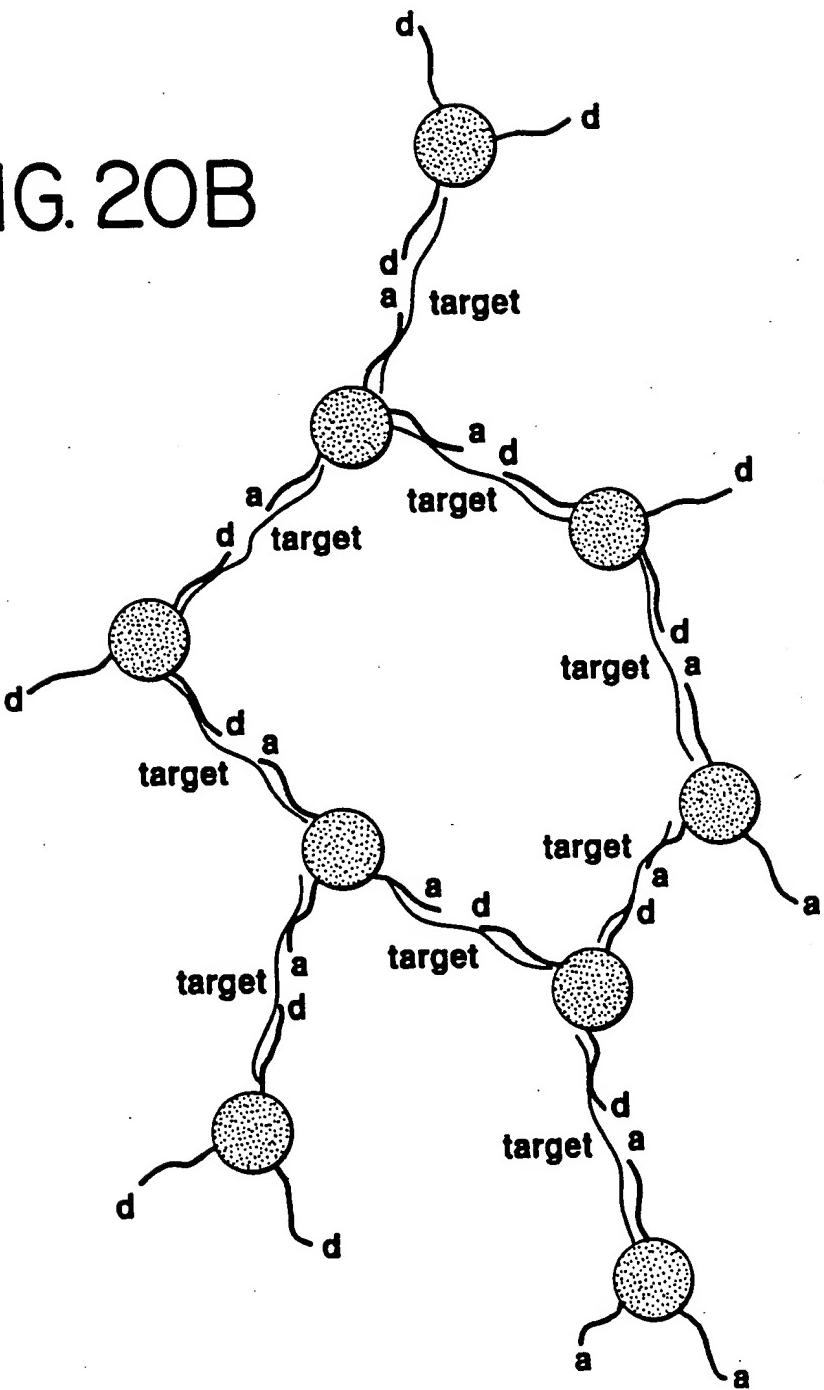


**FIG. 19A****FIG. 19B**

# FIG. 20A



**FIG. 20B**



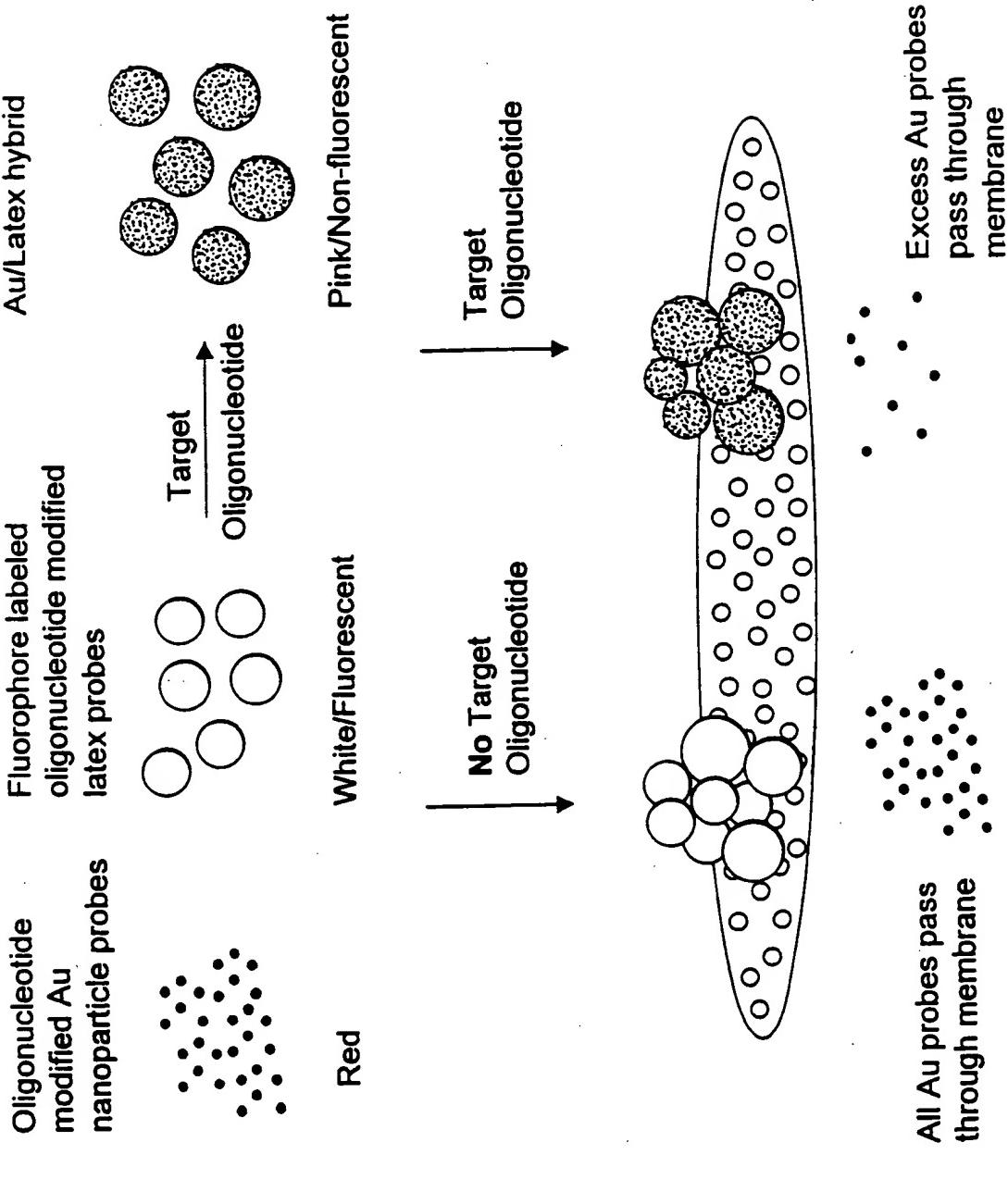
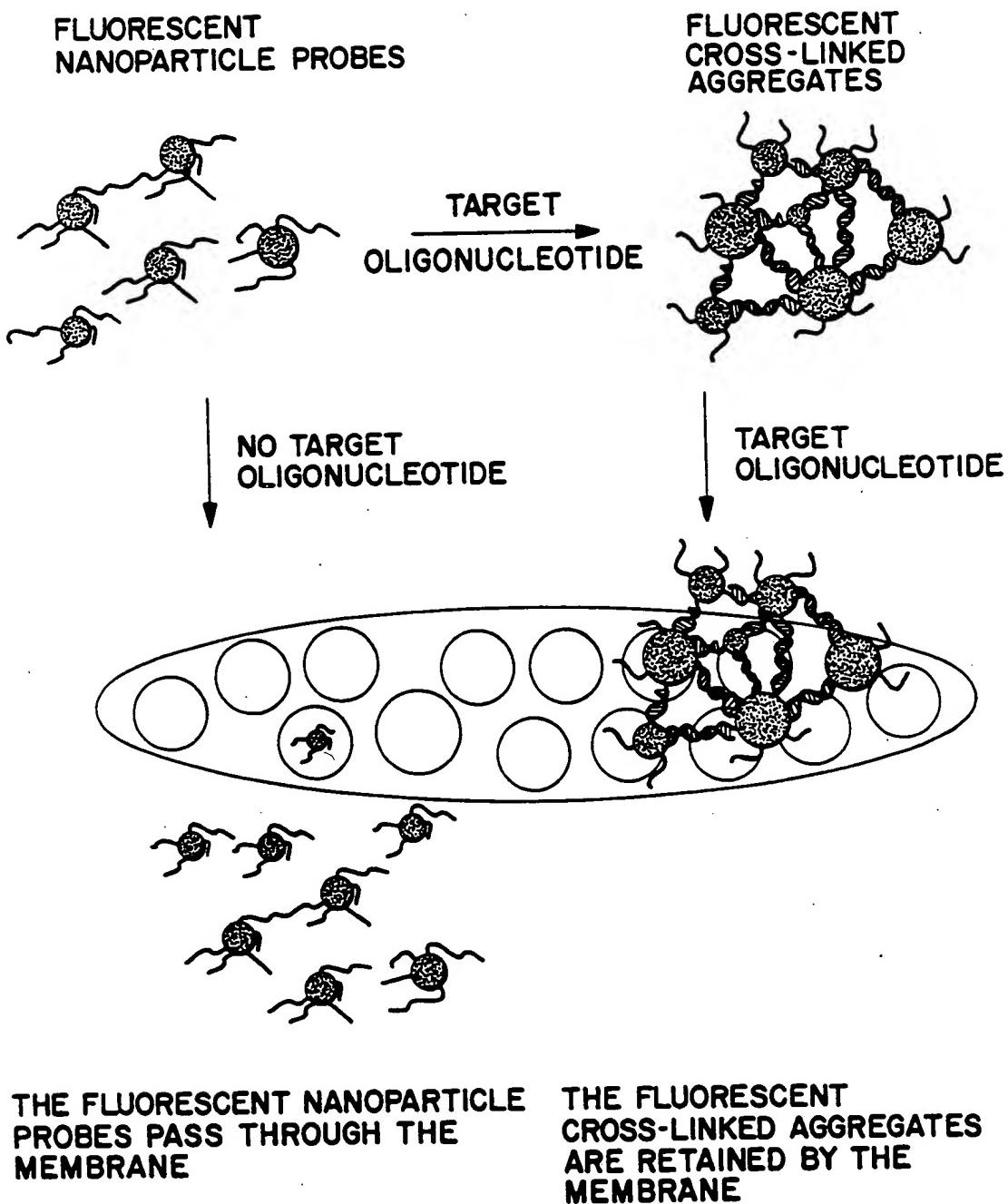


FIG. 22



# FIG. 23

## Anthrax PCR Product

5'G GCG GAT GAG TCA GTA GTT AAG GAG GCT CAT AGA GAA GTA ATT AAT  
3'C CGC CTA CTC AGT CAT CAA TTC CTC CGA GTA TCT CTT CAT TAA TTA

TCG TCA ACA GAG GGA TTA TTG TTA AAT ATT GAT AAG GAT ATA AGA AAA  
AGC AGT TGT CTC CCT AAT AAC AAT TTA TAA CTA TTC CTA TAT TCT TTT

ATA TTA TCC AGG GTT ATA TTG TAG AAA TTG AAG ATA CTG AAG GGC TT 3'  
TAT AAT AGG TCC CAA TAT AAC ATC TTT AAC TTC TAT GAC TTC CCG AA 5'

141 mer Anthrax PCR product [SEQ ID NO:36]

3' CTC CCT AAT AAC AAT

[SEQ ID NO:37]

3' TTA TAA CTA TTC CTA

[SEQ ID NO:38]

Oligonucleotide-Nanoparticle Probes

## Blocker Oligonucleotides

3' C CGC CTA CTC AGT CAT CAA TTC CTC CGA GT  
3' A TCT CTT CAT TAA TTA AGC AGT TGT  
3' TAT TCT TTT TAT AAT AGG TCC CAA TAT  
3' AAC ATC TTT AAC TTC TAT GAC TTC CCG AA

[SEQ ID NO:39]

[SEQ ID NO:40]

[SEQ ID NO:41]

[SEQ ID NO:42]

FIG. 24

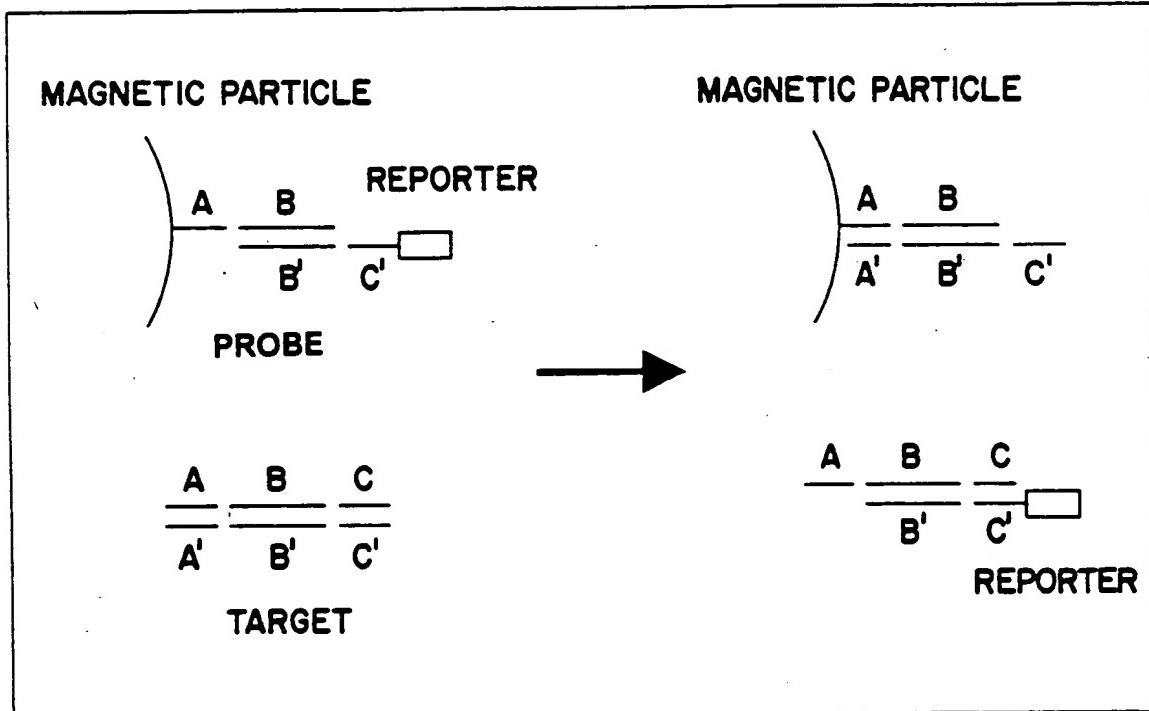
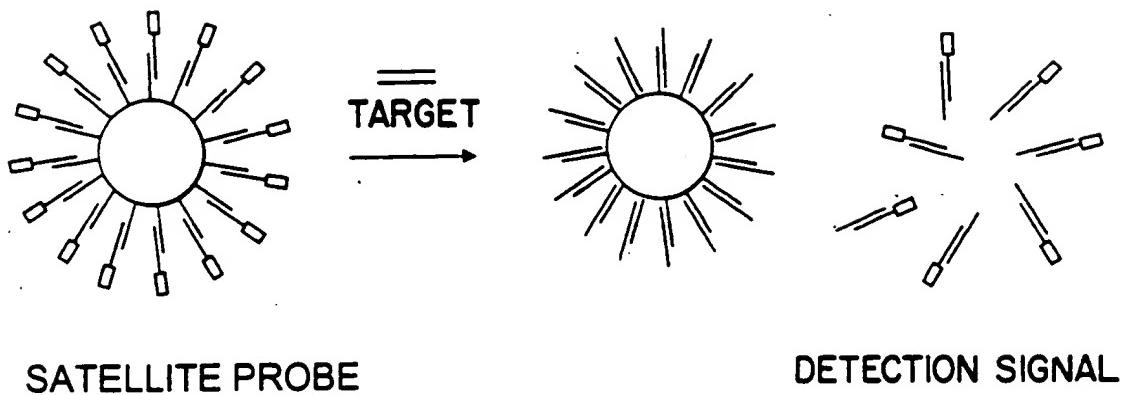


FIG. 25A

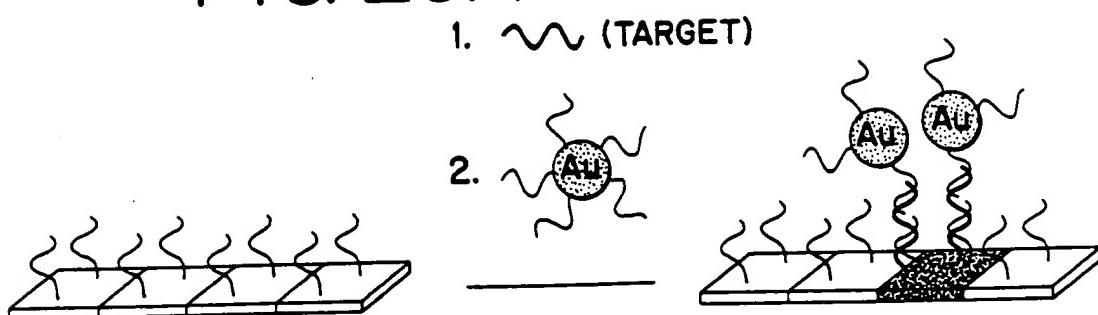


FIG. 25B

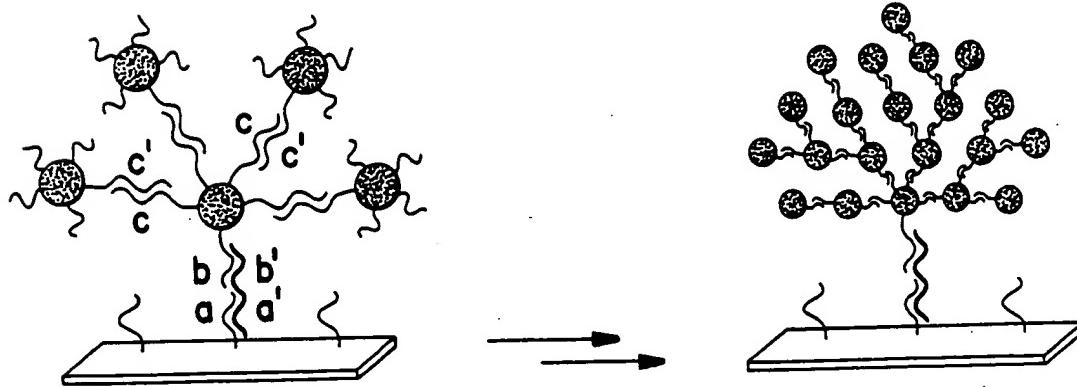
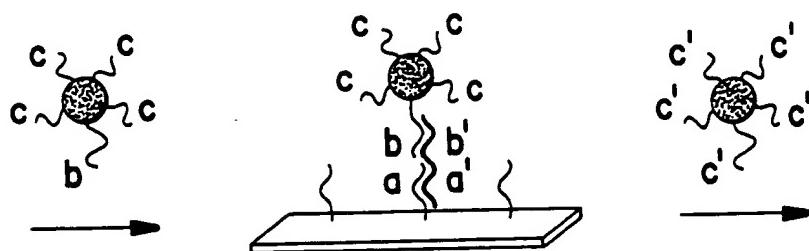
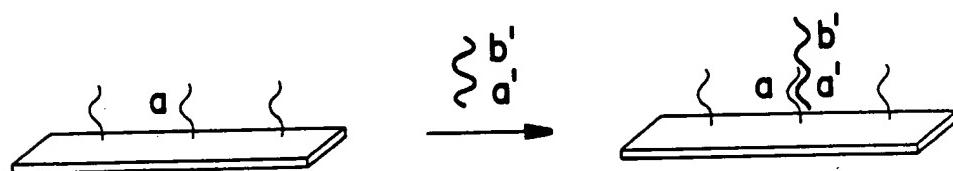


FIG. 26A

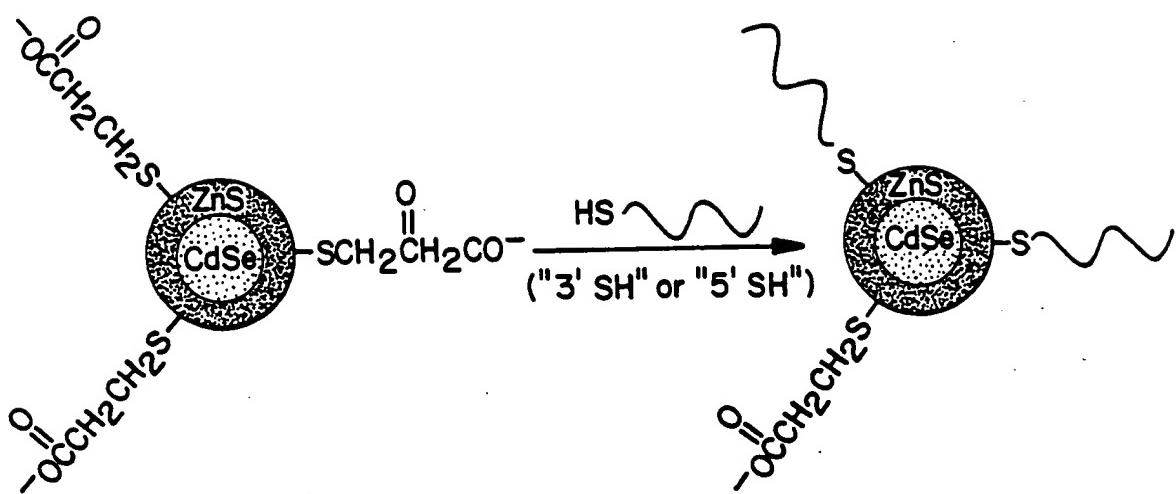


FIG. 26B

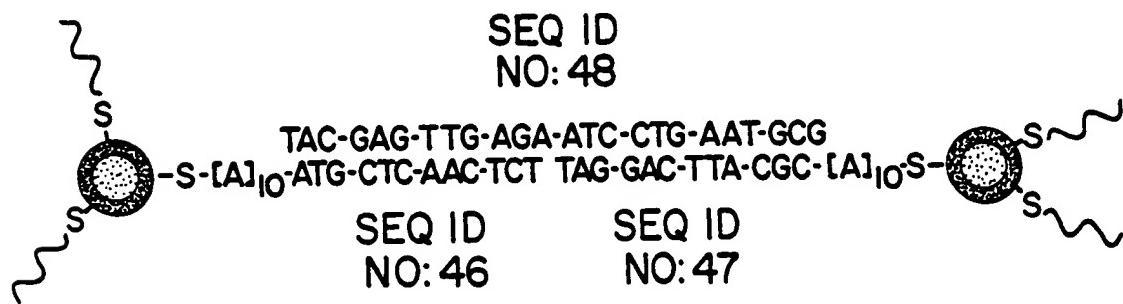


FIG. 27A

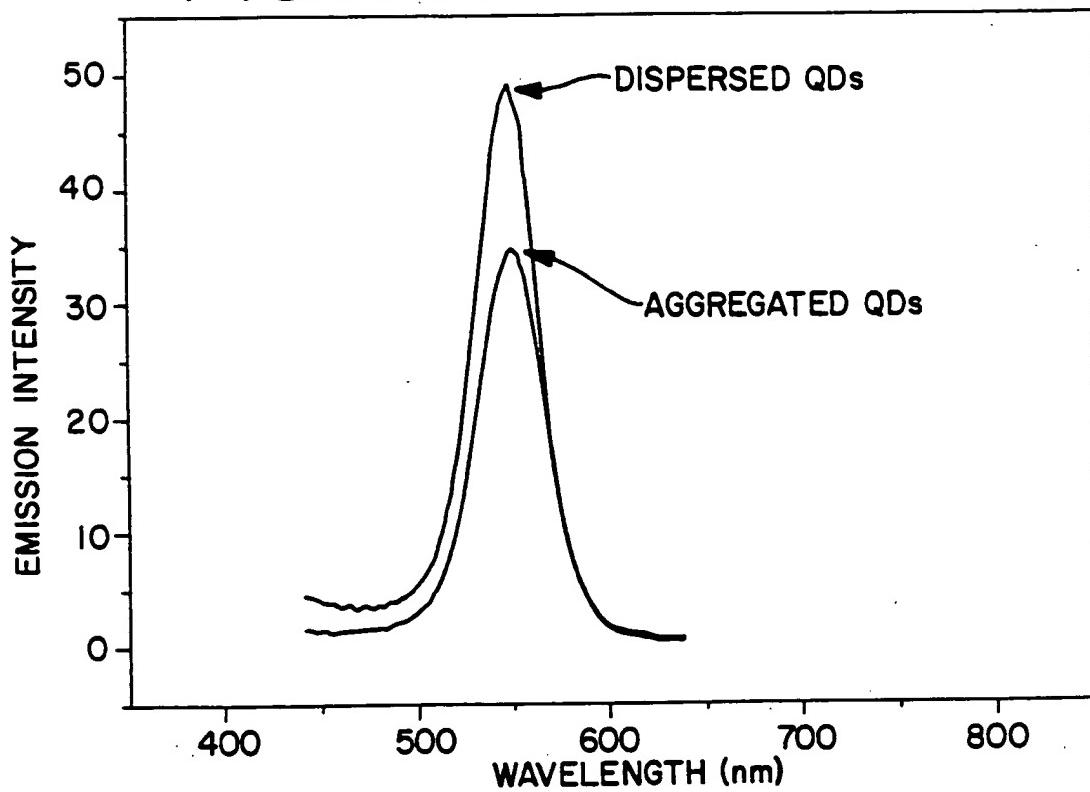
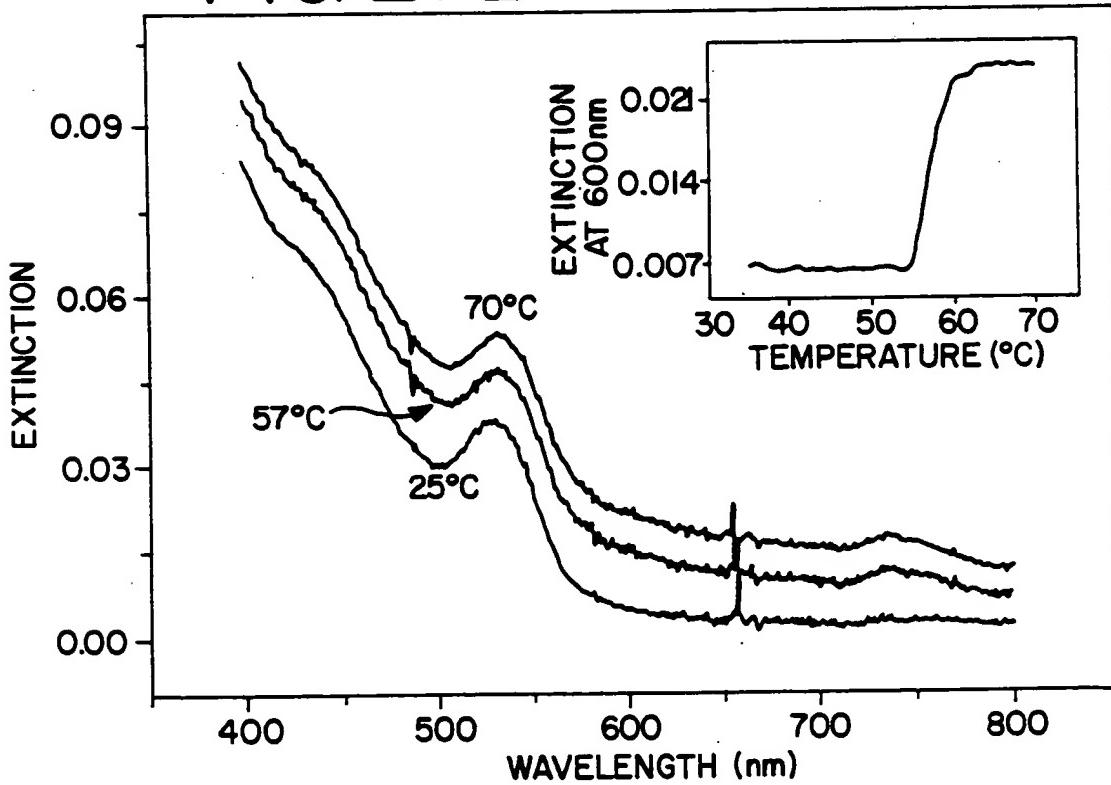


FIG. 27B



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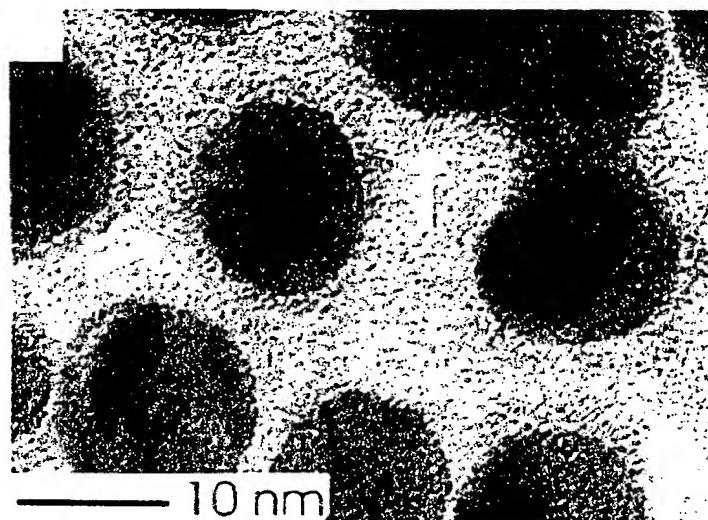
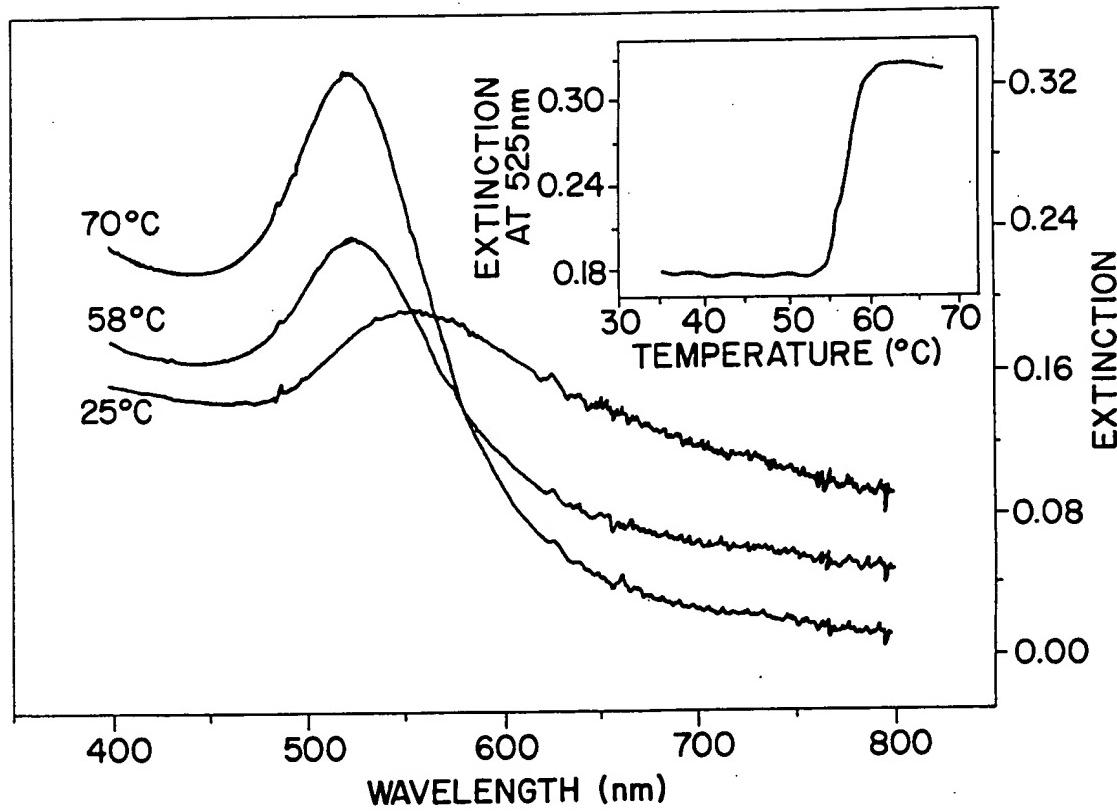
**FIG. 27C****FIG. 27D**

FIG. 28A

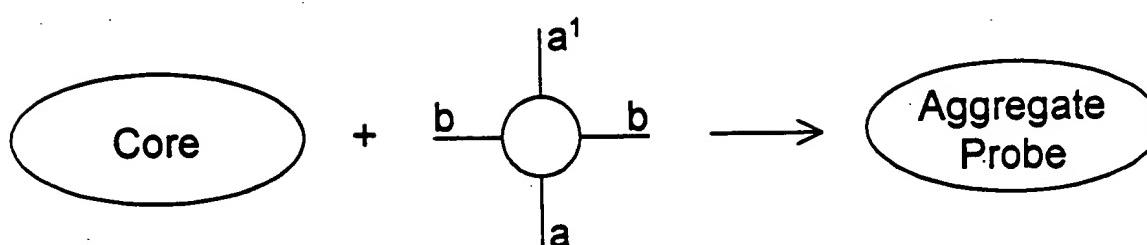
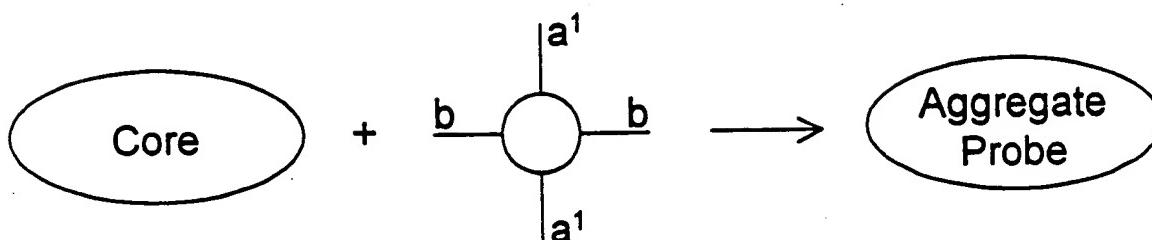
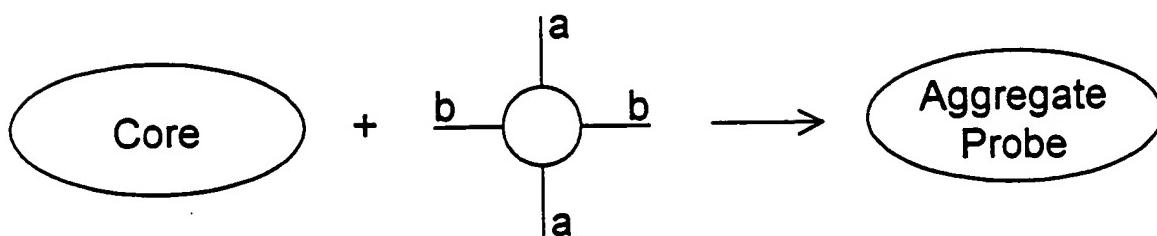
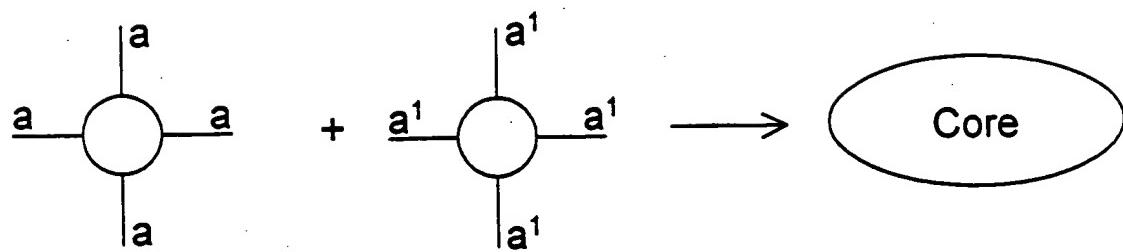


FIG. 28B

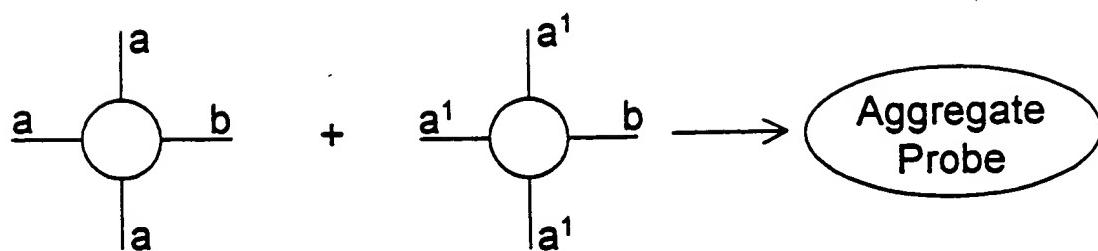


FIG. 28C

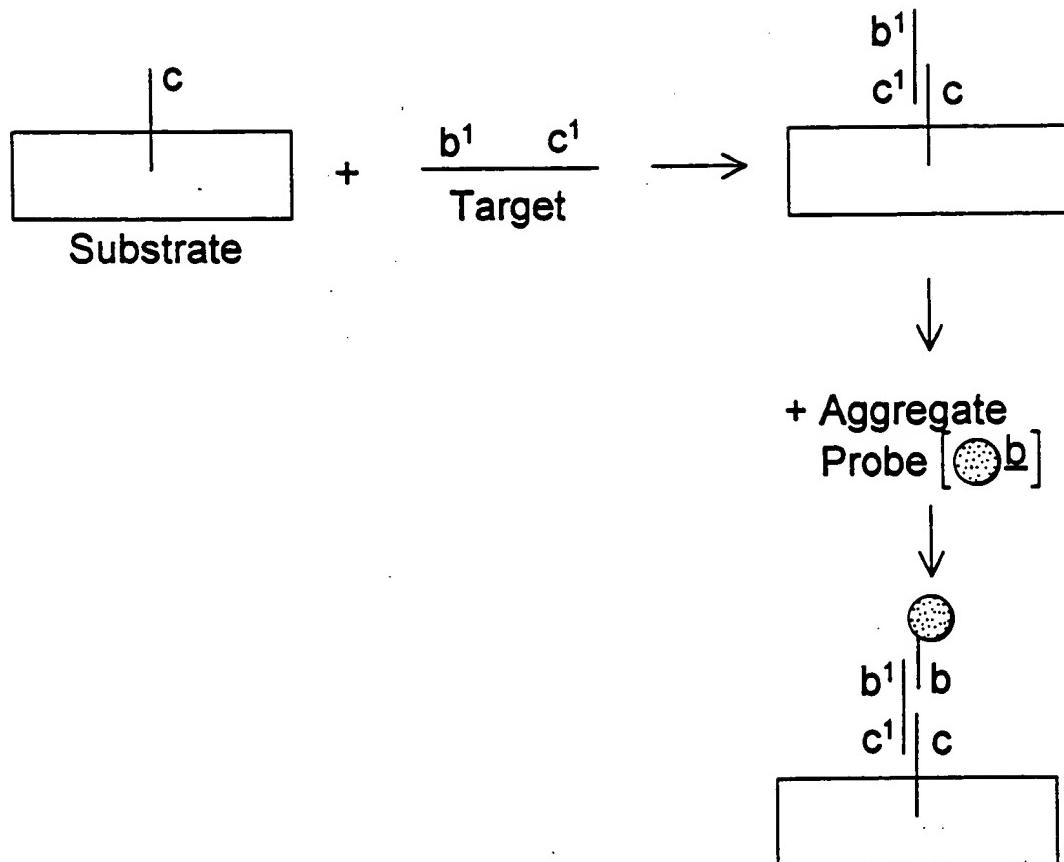


FIG. 28D

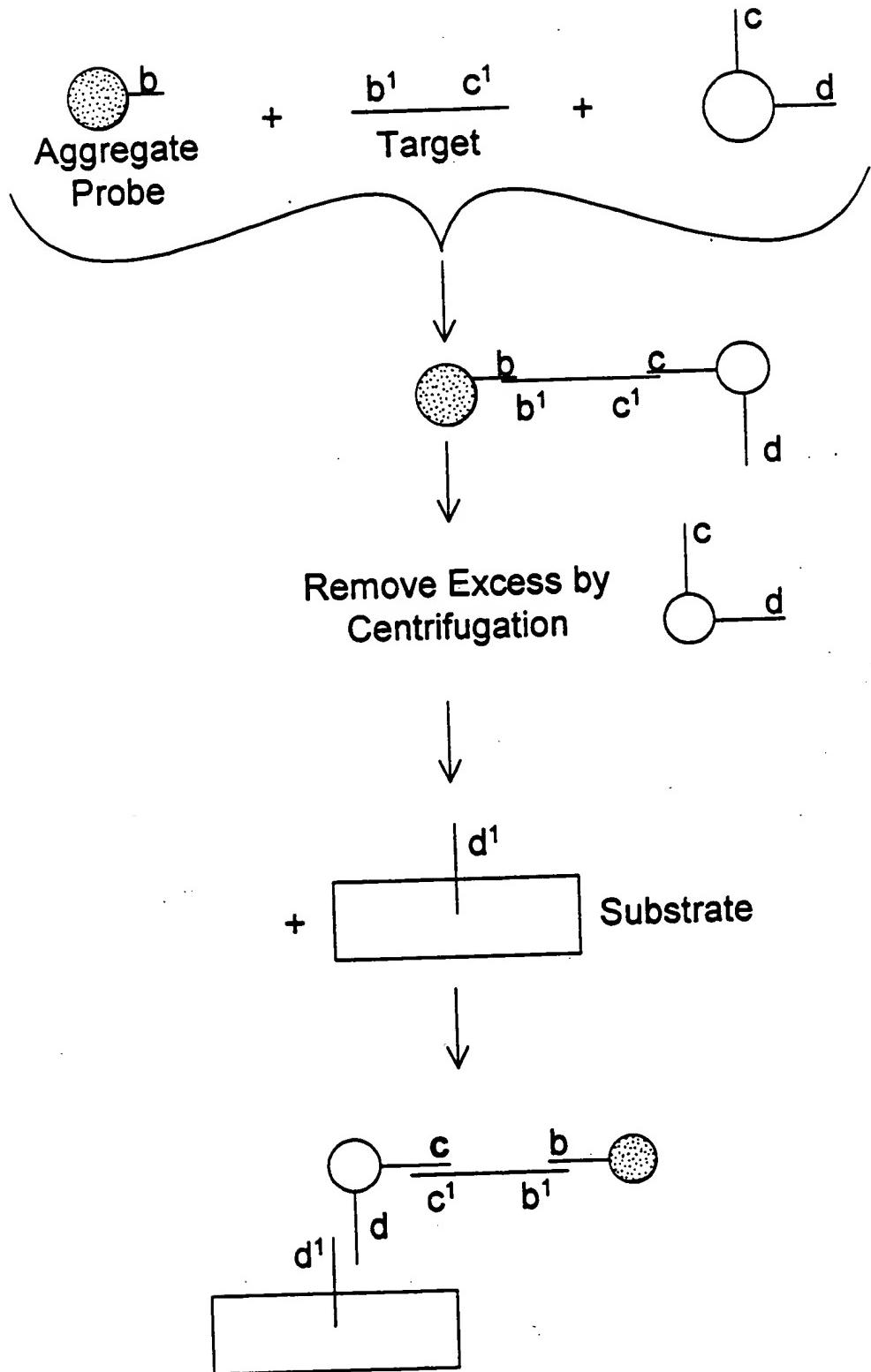
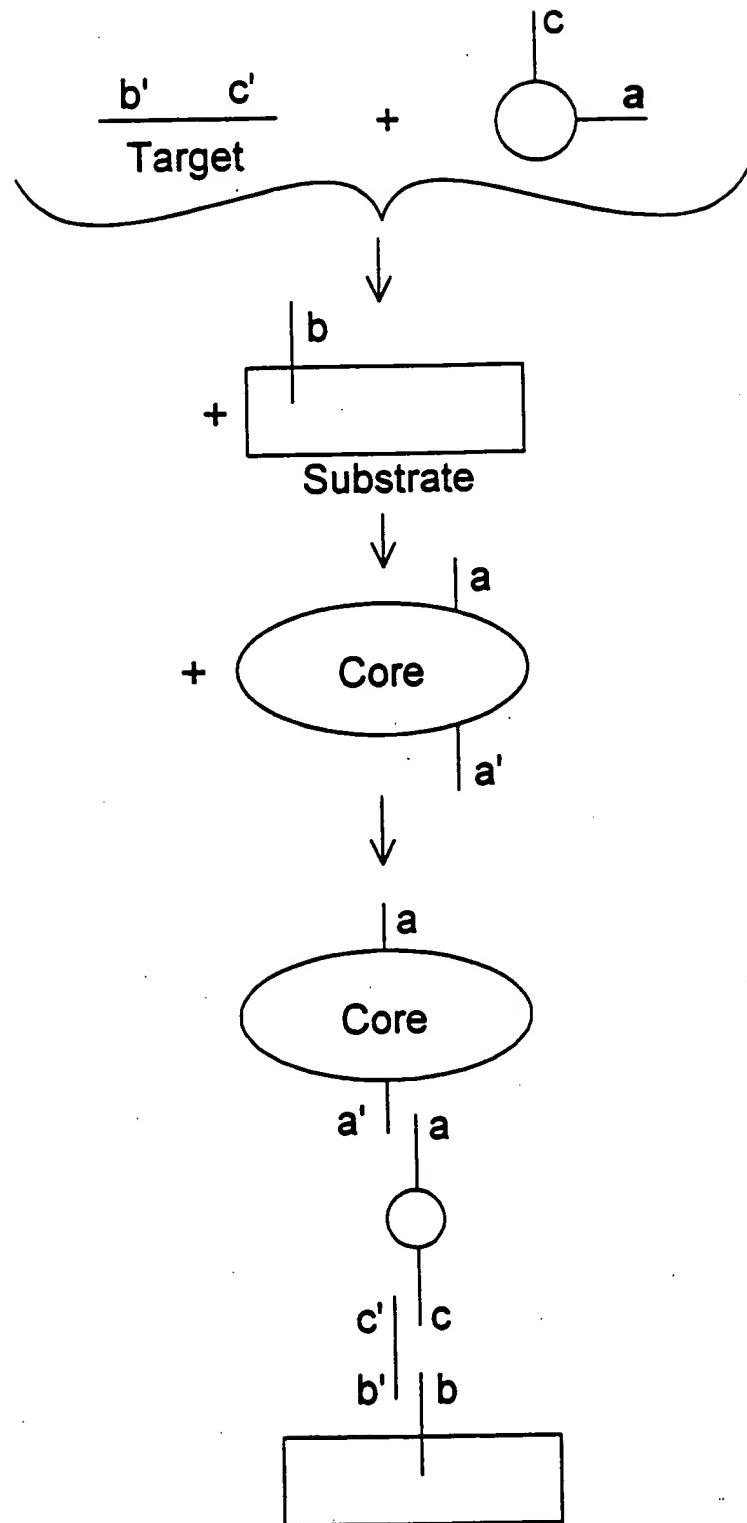
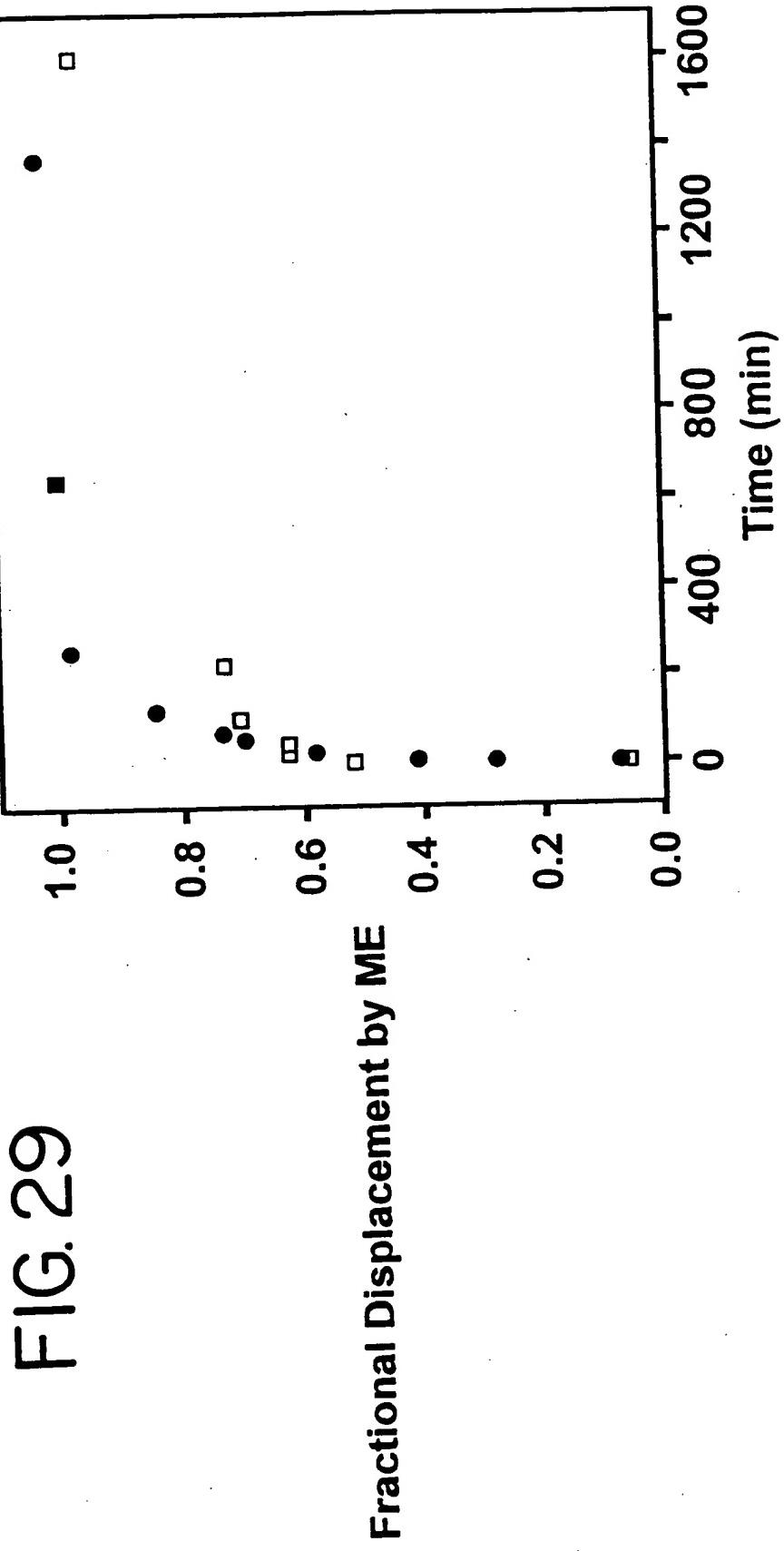


FIG. 28E





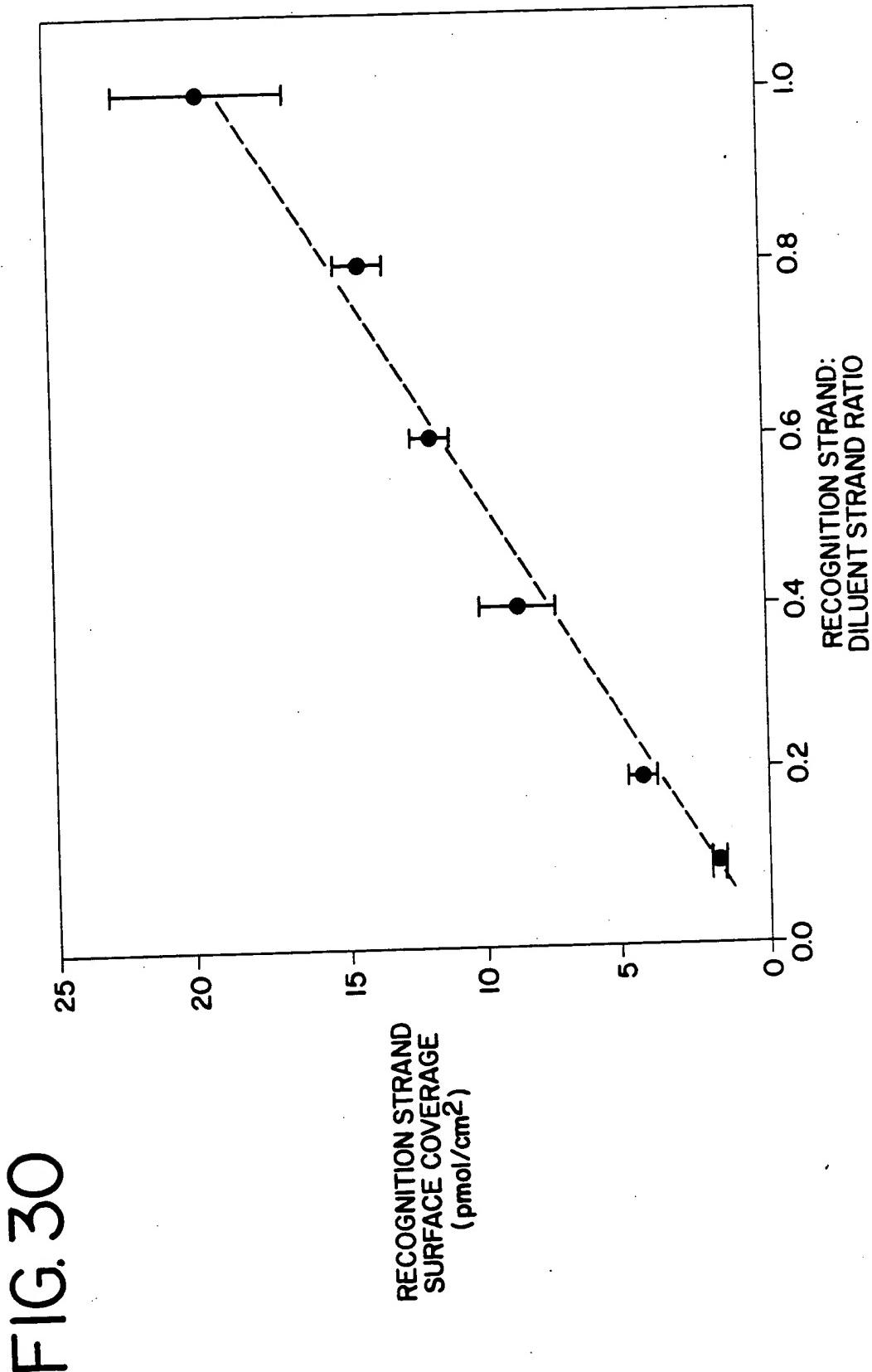
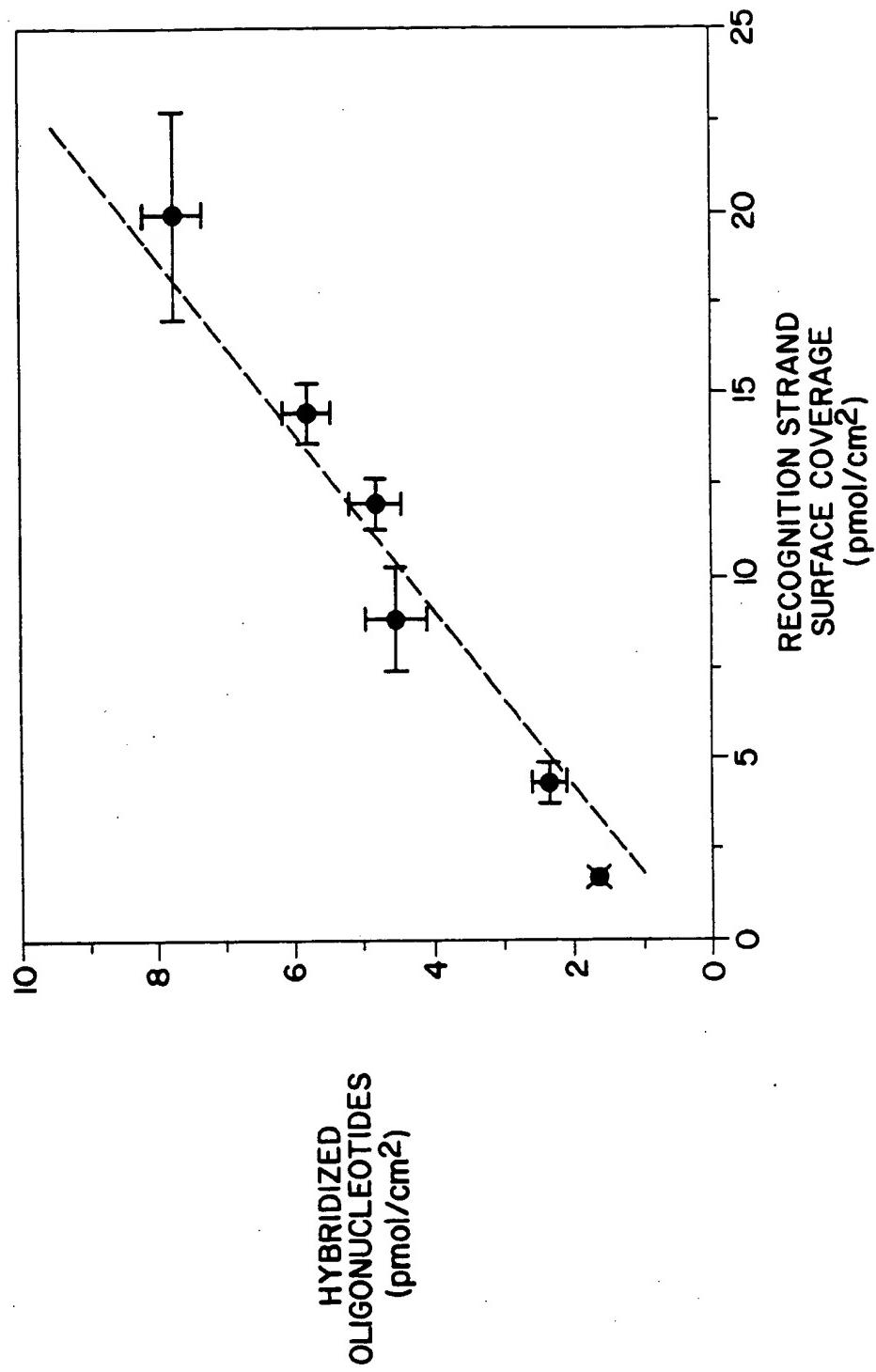


FIG. 3|



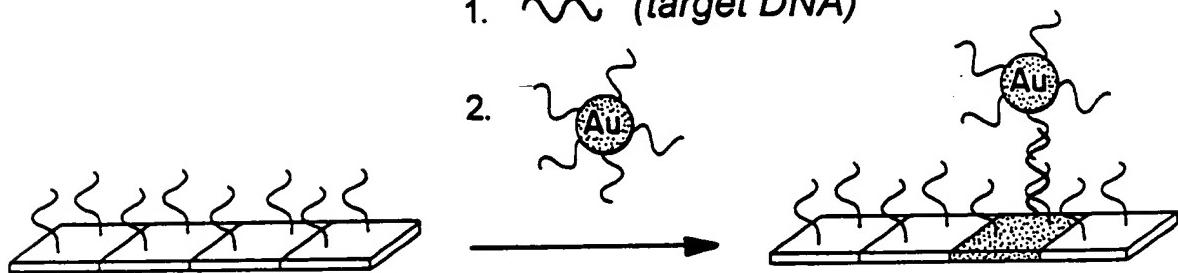
**FIG. 32**

[SEQIDNO:56]

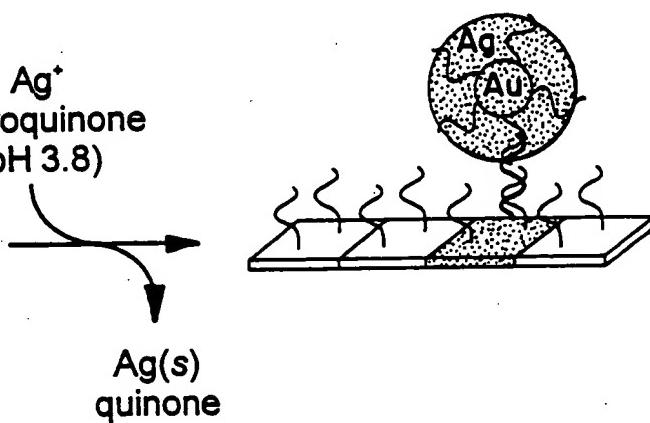
5' GGA TTA TTG TTA- -AAT ATT GAT AAG GAT 3'  
CCT ANT AAC AAT TTA TAA CTA TTC CTA  
[SEQ ID NO: 57] [SEQ ID NO: 58]

**N** = A (complementary),  
G,C,T (mismatched)

- ## 1. ~~~ (target DNA)

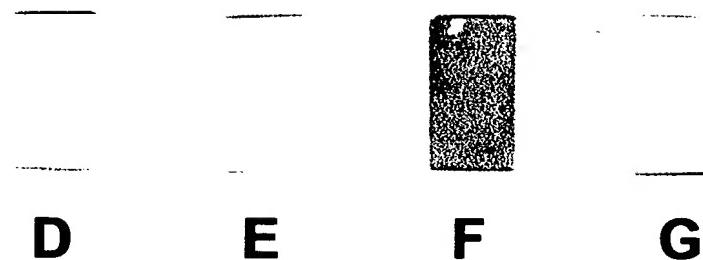
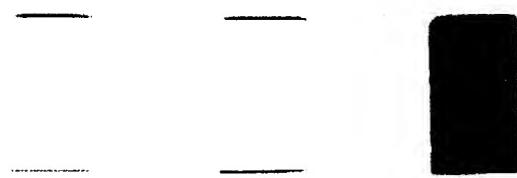


$\text{Ag}^+$   
hydroquinone  
(pH 3.8)



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**FIG. 33**



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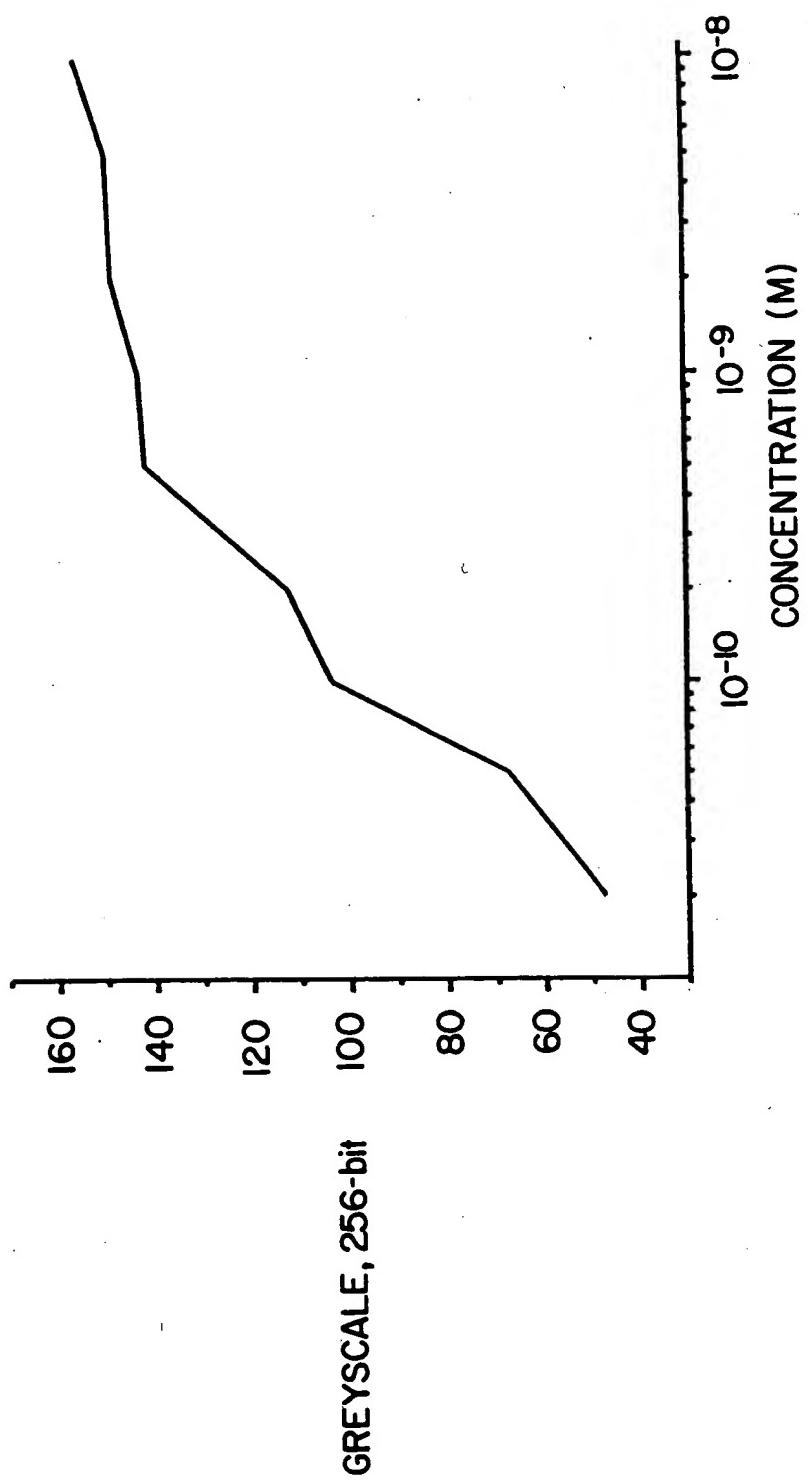


FIG. 34

FIG.35A

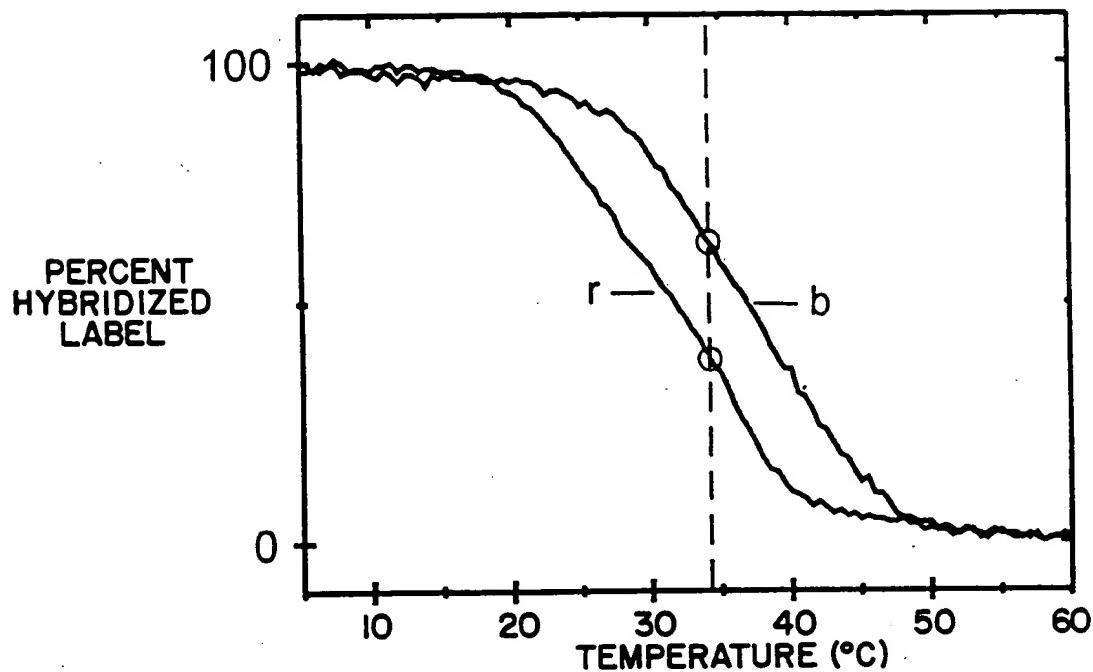
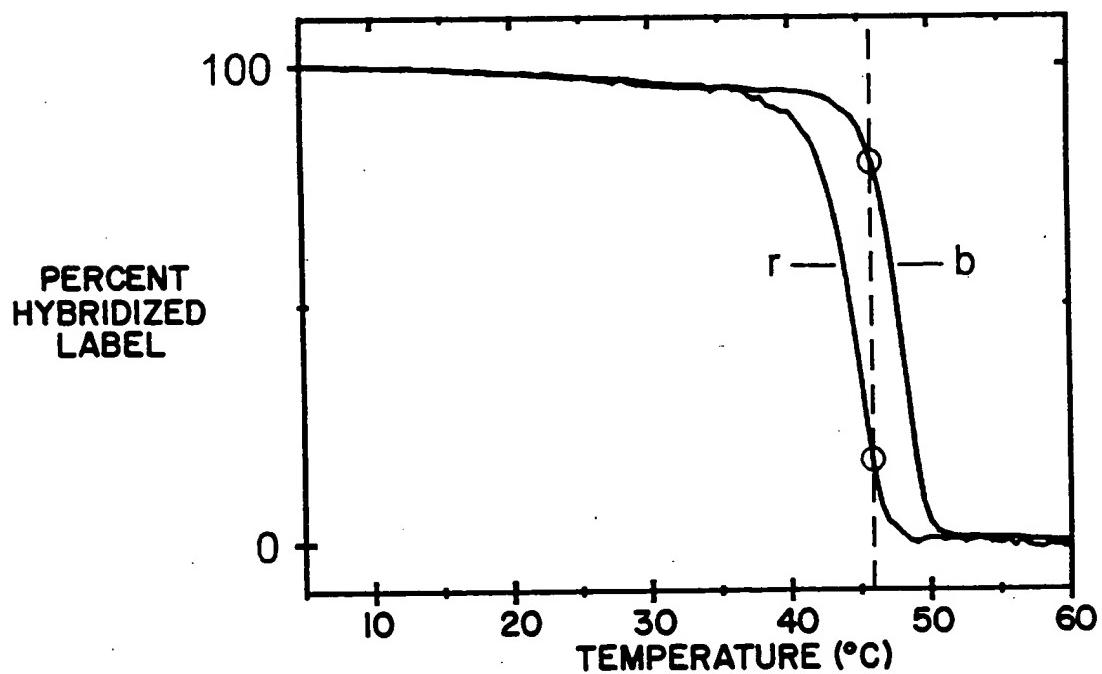


FIG.35B



BEST AVAILABLE COPY

**FIG. 36A**



**FIG. 36B**



C A T G

FIG.37A

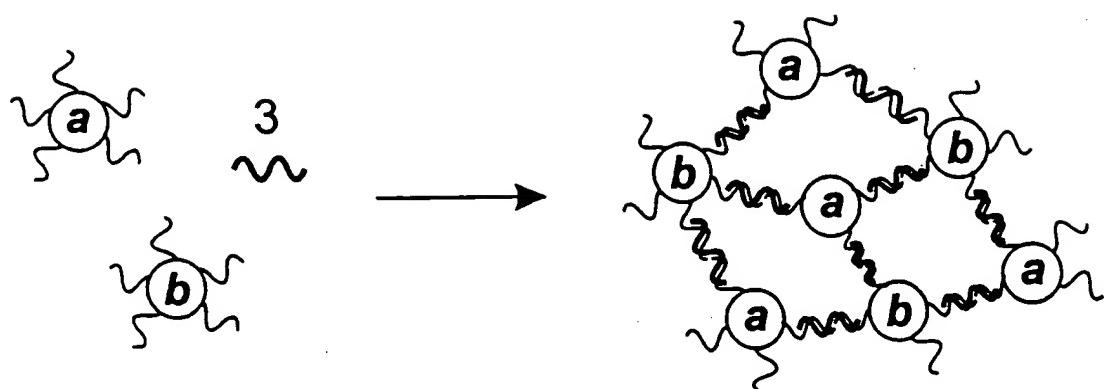


FIG.37B

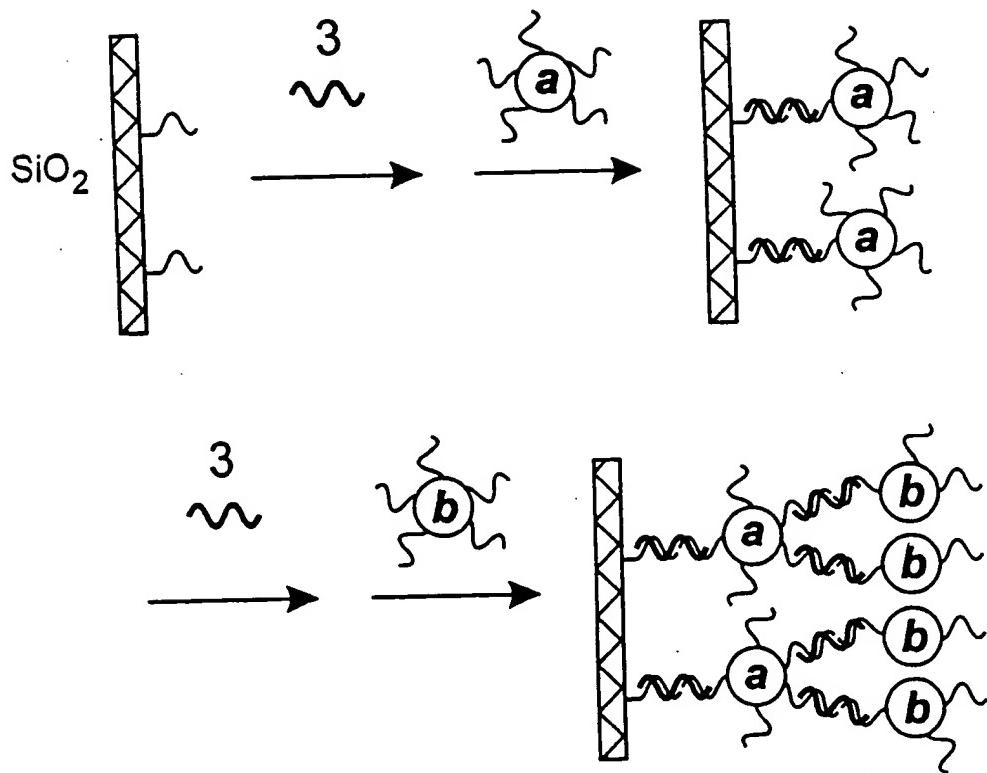


FIG. 38A

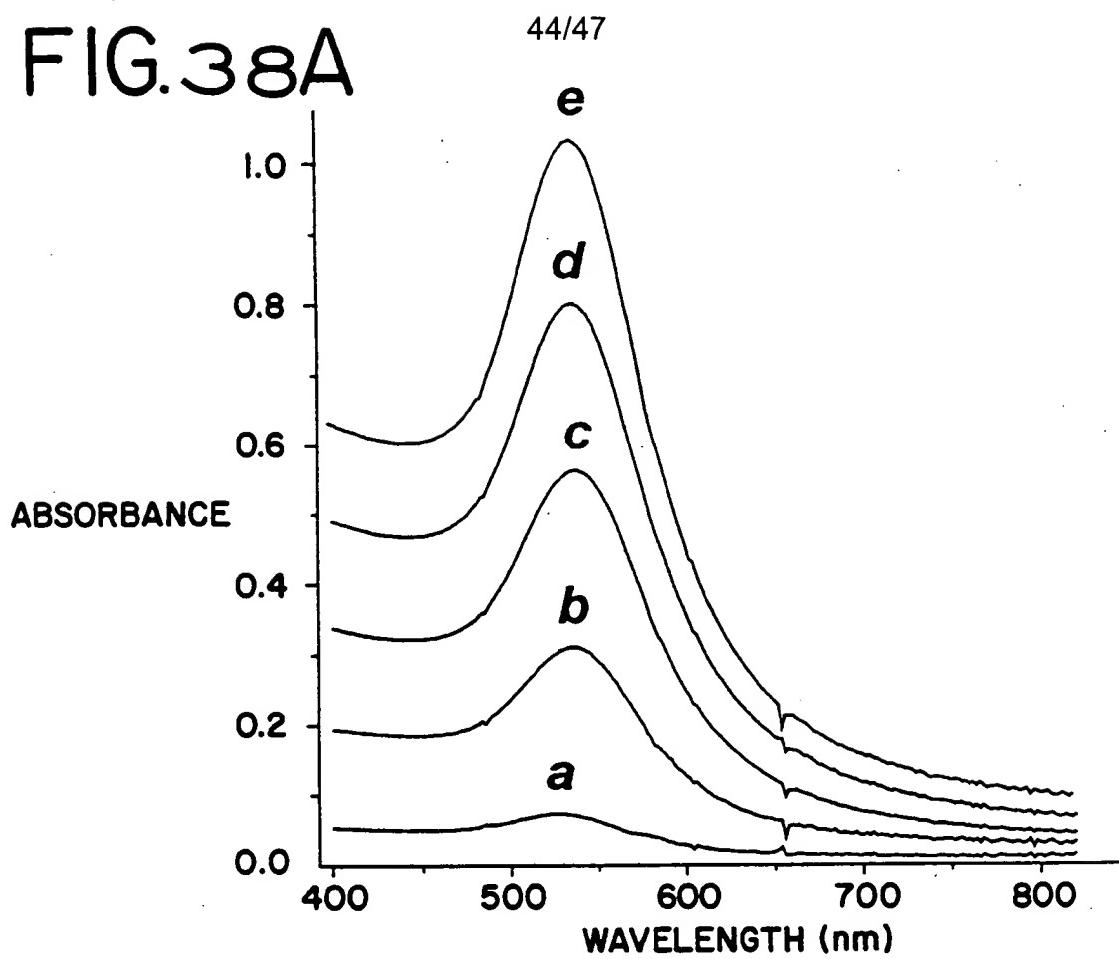
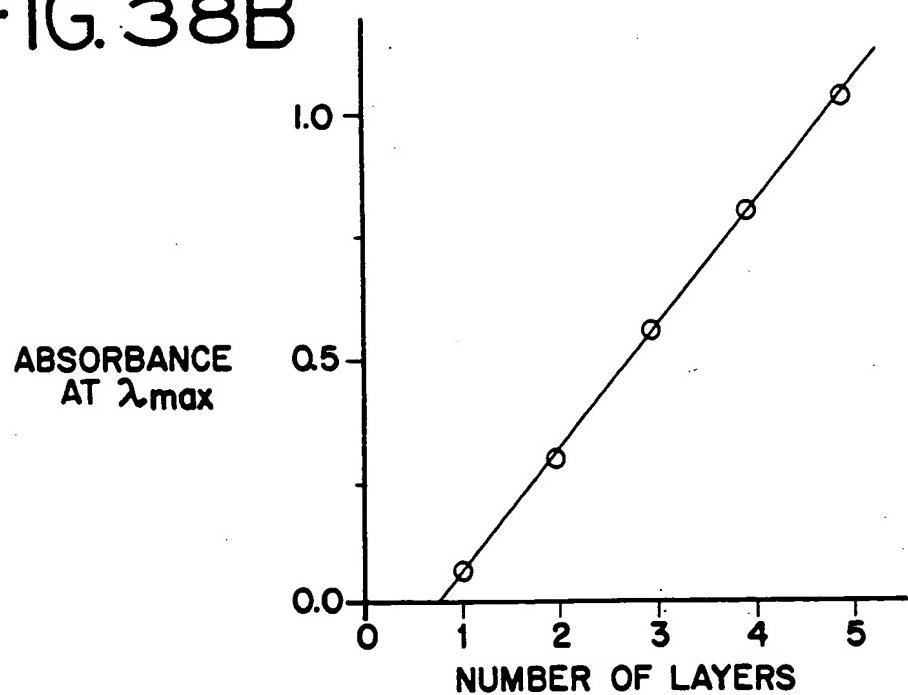
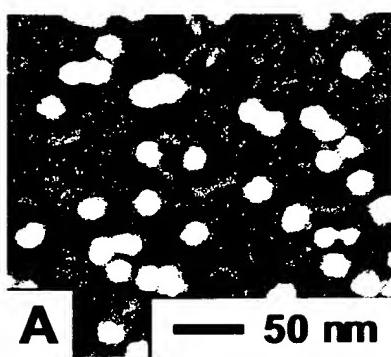


FIG. 38B



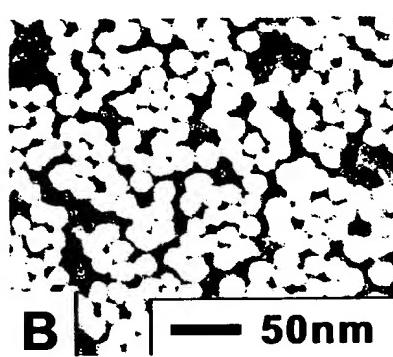
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FIG. 39A



A — 50 nm

FIG. 39B



B — 50nm

FIG.39C

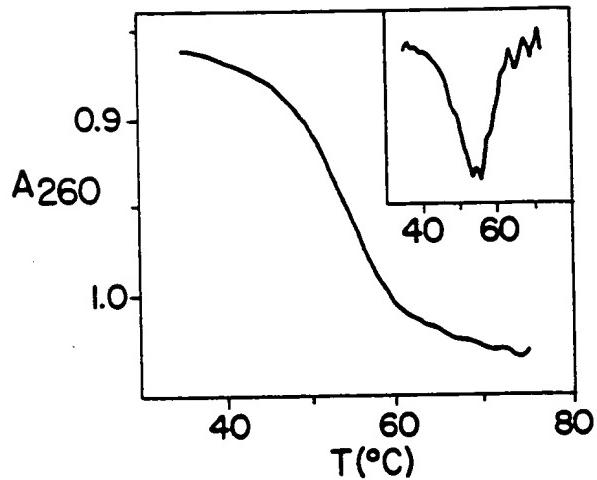


FIG.39D

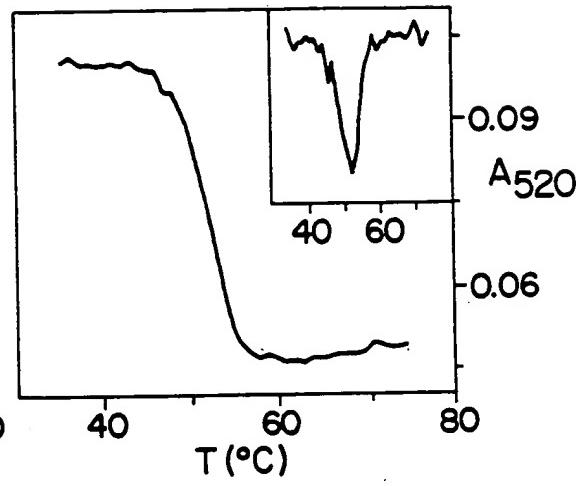


FIG.39E

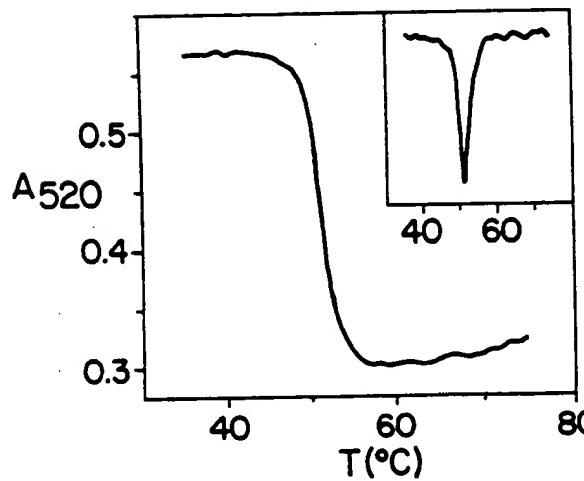


FIG.39F

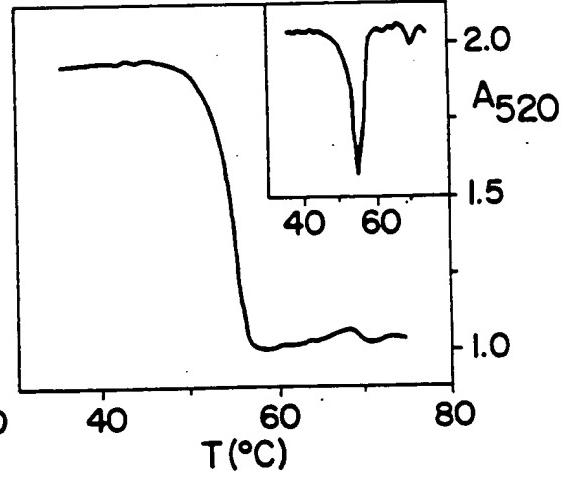


FIG. 40

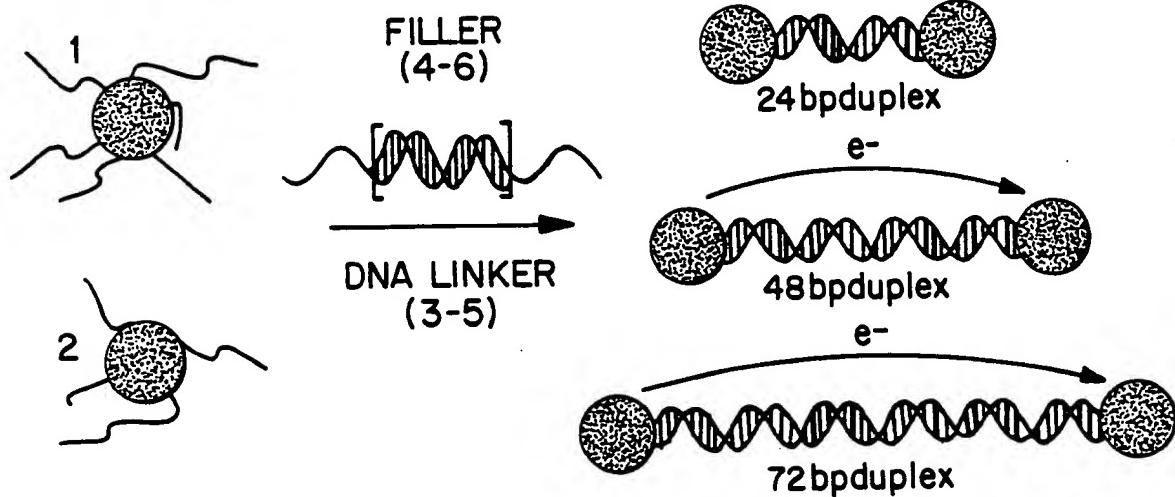


FIG. 41

